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ABSTRACT

Recommendations and issues concerning population growth rate and its linkage to hunger and malnutrition, family planning programs and U.S. foreign aid are presented in statements from representatives in Congress from the states of Texas, Michigan, Illinois and New York, and also representatives from World Population Society, the Futures Group, Worldwatch Institute and Population Crisis Committee. The ethical issue of family planning programs with elements of coercion (such as forced abortions) is raised. It is suggested that the critical element in United States foreign aid be voluntary family planning activities that do not violate certain basic principles of human rights. The relationship between population and key resources such as cropland, water, fertilizer, oil, technology and climate is also discussed. Land-use changes associated with population growth, such as deforestation, which in turn affects soil erosion, climate and related environmental change, and consequently food production are highlighted. Additional issues raised include: the need to address poverty and employment, and the U.S. role in not only financing but also increasing awareness and receptivity to family planning programs in developing countries. (SY)

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POPULATION GROWTH AND HUNGER

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HEARING

BEFORE THE

SELECT COMMITTEE ON HUNGER
HOUSE OF REPRESENTATIVES

NINETY-NINTH CONGRESS

FIRST SESSION

HEARING HELD IN WASHINGTON, DC, JUNE 6, 1985

Serial No. 99–4

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POPULATION GROWTH AND HUNGER

THURSDAY, JUNE 6, 1985

House of Representatives,
Select Committee on Hunger,
Washington, DC.

The committee met, pursuant to call, at 9:40 a.m., in room 2212, Rayburn House Office Building, Hon. Mickey Leland (chairman of the committee) presiding.

Members present: Representatives Hall, Panetta, Daschle, Kostmayer, Dorgan, and Evans.

OPENING STATEMENT OF HON. MICKEY LELAND, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TEXAS

Chairman **Leland**. Good morning. The committee will come to order.

I would like to welcome our distinguished witnesses to this hearing of the Select Committee on Hunger.

Since reauthorization by the House of Representatives in March of this year, the select committee has continued its study of issues related to hunger and malnutrition both internationally and in the United States. The question of population growth rates in developing countries is an issue with direct linkages to widespread hunger and malnutrition.

We are pleased to have each of you with us today to discuss potential consequences of human population growth rates on the already poor and malnourished peoples of developing countries. The committee will additionally be interested in your perspectives on appropriate population family planning programs this Government should be supporting in the Foreign Assistance Program. Providing voluntary family planning assistance to people in less developed countries is a critical element of that foreign aid program.

The House of Representatives will soon consider a foreign assistance authorization bill for fiscal year 1986. The Foreign Affairs Committee has signaled the importance with which it views population problems by approving additional funding for the population and family planning programs conducted by AID. It is not certain, however, that these higher levels for population programs will survive, or at least survive without a fight, when the House debates the overall foreign aid bill. But what we want to do today is to illuminate the linkages, the connections, between uncontrolled population growth rates and the existence of starvation, hunger and malnutrition on the face of the Earth.

This committee is interested in knowing more about the consequences of high fertility rates on already vulnerable regions and countries of the world. And as important, let me say that we are interested in the consequences on the health and overall security of individual families. How do high birth rates affect mothers already on the edge of the malnutrition-disease cycle? How does close birth spacing affect the infants and young children of families living in absolute poverty and thus with marginal food security?

These are certainly issues of paramount importance to the select committee. We are also interested in hearing how hunger might in fact be a cause of overpopulation, just as the reverse is true.

The attention of the select committee, the Congress, and the American public has been focused for the last 9 months or so on the famine sweeping sub-Saharan Africa. This committee has been active in ensuring adequate and proper response to this unparalleled human catastrophe. Our interests, however, clearly extend beyond the immediate relief requirements to longer-term recovery and development issues for Africa. Particular observations of population and hunger linkages in sub-Saharan Africa by our witnesses would certainly be welcome.

That concludes my opening remarks.

Let me again thank our witnesses today, particularly my colleagues who have come here to participate in this most important hearing. We are honored to have with us three Members of the House who have become well-recognized experts in the population field, three experts, let me say, who bring to our discussion genuine understanding of the issue through research, study, and program development.

Congressman John Porter has been long interested in international family planning programs supported by Governments and institutions around the world. Representative Porter will speak on current trends in population and family planning programs.

Representative Sander Levin formerly served as the Assistant Administrator for Science and Technology at AID, a bureau housing the Agency's population office. Congressman Levin will address the role of population projects in our Foreign Assistance Program.

Congressman James Scheuer of New York brings direct experience in the area to our hearing. Representative Scheuer served as chairman of the Select Committee on Population and continues to be an acute observer of population issues.

All of our congressional witnesses have serious time constraints today. We must accommodate their schedules and move quickly. Representative Levin, I know, must depart in a few minutes for his son's high school graduation, so let us hear from Sander Levin first.

We wish your son many happy returns once he graduates. I just know he is going to college to study politics.

Mr. LEVIN. Actually, Mr. Chairman, he is going back to Michigan to take a year off and work and try to improve his hockey skills and see if he can play level A hockey as well as level A academic pursuits.

Let me mention, if I might, because you'll be seeing me the next few hours, they moved his graduation from 10 to 3, not that we will be here until 3 o'clock. Should I still go first?

Chairman LELAND. Yes.

STATEMENT OF HON. SANDER M. LEVIN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

Mr. **Levin**. Mr. Chairman, it may make more sense in any event, though it doesn't in terms of seniority, because I was asked to touch on the historical perspective, the kind of overall framework within which population programs have evolved, in particular American assistance to international population programs. Since that is my assignment and history goes before the current state of affairs, I will go first.

There is a statement, Mr. Chairman, that I have submitted for the record. I know under your normal procedures it will be included in the record. So, I will summarize if I might.

Chairman **Leland**. I thank the gentleman.

Mr. **Levin**. I also welcome the opportunity to join with my colleagues and conferees, my friends Jim Scheuer and John Porter, as well as the gentlemen and, I hope, women behind me with whom I have had a chance to work on population issues over the years and for whom the greatest respect is held in this field and others.

I would like to say, if I might, to you, Mr. Chairman, how important it is that this Committee on Hunger is considering issues of population. One of the impediments to the growth of understanding on population issues and action on population issues has been the tendency to take those issues in isolation from others, to look at population separately, or to look at agriculture separately, or to look at health separately. There is a need to do some segmenting, but as critical as the need is for some separation, including funding, is, I think, the overriding prerequisite to look at relationships.

So, there is something important, I believe, symbolically that this Committee on Hunger is looking at population. I hope that message goes forth through this land.

During the first half of the 20th century, population grew faster than during any other 50-year period in the history of the world, but it still remained at less than 1 percent per annum. That population growth was rather, in terms of rate, evenly divided between industrialized and nonindustrialized countries. But as we all know, but it is worth repeating to frame the problem, in the 20 years beginning with 1950, the annual rate of population growth doubled in the world. There was a very different distribution of that population growth from previous patterns. Ninety percent of the population growth occurred in developing countries.

There were quite differing responses to that historic change in population growth. It differed from industrialized to industrialized countries and from nonindustrialized to nonindustrialized countries. But there were some common factors to place this in a historical perspective. There were some common factors more or less among industrialized and nonindustrialized countries. Among the industrialized countries there tended to be the following reaction, one of concern and also one of a strong willingness to look at the impact of this historically high population growth rate. Within industrialized countries, after all, during this same period there was a revolution in attitude toward contraception and the availability of it. It was the time when the pill was discovered and in a very few years became widely used.

There was a revolution in attitudes toward discussion of family planning and the use of it. Also during the same period of time within industrialized nations there developed some centers of expertise on demography.

That doesn't mean there weren't instances of resistance to this change in attitude or to U.S. participation in addressing population issues. I refer in my testimony to discussions within the United Nations in the 1960's, when the United States cast a vote against the technical assistance to developing nations regarding population if it included the actual supply of contraceptive services, contraceptive devices. There are people here who will come later who were leaders in the effort to overcome this resistance. Indeed, it was overcome.

In a period of 7 or 8 years, beginning in the mid-1960's, there were very dramatic changes, as we know, in American policy and programs. There was a major growth in funding, and there was an earmarking of funds for population programs. There evolved a central population office within AID and, I think very importantly, the placement of field staff within developing countries with expertise that could work with developing nations and their specialists in this field.

At the same time, there were factors in developing nations which worked against their addressing their own population growth rates, which is mentioned, were at a historic level. And the testimony covers these or covers some of them. I think they are understandable. This was the immediate post-independence period. There was a great deal of nationalism, understandably so, a great deal of pride in independence, and I think, perhaps as a result, pride in numbers.

There were immense problems of malnutrition, in some cases, of civil strife. There also were some ideological perspectives that I refer to in my testimony. Most of the developing countries were 90 percent rural. There was a deep pattern of larger families, of work by children within rural areas.

There also at that time was a rather stringent, I think, prohibition or custom against public discussion of private activities, even if they had some major effect on the public at large.

For those reasons and others, there was within most developing countries a strong hesitation to tackle the thorny issues of population growth rates.

I also mention in my testimony the high infant and child mortality rates in those countries. This very much relates to one of the questions that you raise. For instance, it wasn't so long ago that a woman in the Sahel had to bear six children to term to have a reasonable assurance that one would live to the age of 30.

Well, in a word, there were these common factors in industrialized nations that influenced us to be open as well as concerned about population issues while there were factors that led in the opposite direction in some developing countries. There was a clash, as we know, at Bucharest. That clash was often described as one between the development versus the pill—that is misstated in my testimony—versus the pill. But after Bucharest, after 1974, there occurred really major changes in population policies and programs. I think the opposite happened after Bucharest that some predicted.

Some industrialized nations who had criticized the emphasis on development went home and began to reevaluate and give international population assistance programs a clearer development focus. That was clearly true in the United States. In various developing nations which had criticized in various instances the industrialized nations' emphasis on contraceptives, more interest developed in family planning as an integral part of overall socioeconomic development. In brief, developed nations came to understand better the complexity of population programs and developing nations, the urgency of them.

In the years after Bucharest, this consensus developed, as I mentioned, it deepened. I think it was reflected at Mexico City, a conference that was attended by Mr. Scheuer and Mr. Porter and myself.

I just want to spend the last couple of minutes talking about the challenge to this consensus that has evolved in the last couple of years in the United States. The consensus has been challenged in part by the argument that the population growth rates really aren't basically relevant to socioeconomic development. It is interesting that as more and more developing nations say there is this relationship, there are some in the United States who argue that it doesn't really exist.

I don't think their data holds water. I think, in part, it is driven by rigid ideology. There is the notion that the only thing that matters are economic policies. And now some in the United States are speaking the same language as some in developing nations uttered at Bucharest. It is a strange and, I think, a dangerous inversion.

I mention in the testimony the statements of leaders of developing nations. It was interesting, I think, to listen to the President of Bangladesh after the recent catastrophe there. I think we ought to listen. Population growth rates did not cause the catastrophe. We know that. But as he stated, it made it worse. And in some respects it was very causal. It didn't create the cyclone, but the impact of it, the population pressures in Bangladesh have moved people into more and more precarious areas.

I wish sometimes that people who are armchair experts in the United States and who say the only thing that matters are economic policies would spend a few days in the deltas of Bangladesh.

A second issue that has affected the consensus that I refer to in the United States at least is the issue of abortion. It has become an obstacle to the continuation of this consensus and to the rebuilding between the administration and, I think, the majority in Congress. What we have done is to handle this issue piecemeal. The Agency for International Development has assiduously carried out the amendment of many years ago that prevents U.S. assistance to abortion-related activities. But the issue still flares up, and I think it is understandable; but at the same time, we have to make sure that it isn't carried beyond bounds and becomes a vehicle to destroy voluntary family planning programs.

I think, as we face the ethical issues that are tied in to our assistance programs, we have to follow at least two principles. First we have to be certain that the United States is not in any way an operative partner in activities which we believe violate certain basic principles of human rights and population programs. In population programs, as much as in any of our involvements overseas, commercial, political, military, cultural, we must be as committed to our own principles of human rights as we are at home.

We just have been debating South Africa, I think, correctly. I think we acted correctly. There is no wall that separates human rights issues in one area from another.

Second, we must work to strengthen, not weaken, U.S. support for voluntary family planning activities. Our commitment to developing countries is a real and immediate responsibility in our own interest as well as in theirs. That commitment must be fulfilled within a framework of human rights. It should not become another battleground for the debate within the United States on the issue of abortion.

What role should Congress play then, I conclude? Holding the purse strings is not enough. It is vital that the Congress exercise oversight over the evolution of population policy overall. Congressional oversight is significantly advanced by this Select Committee on Hunger addressing today issues of population growth rates and emphasizing the relationships between population and hunger issues.

As I said at the beginning, one of the gravest threats to development needs and to the battle against hunger in developing nations is the lure of the simple or single answer, the either/or proposition. These needs are urgent and critical. We must acknowledge the requirement for concurrent action on a variety of fronts.

Thank you very much, Mr. Chairman and Mr. Hall, Mr. Kostmayer, and Mr. Dorgan, for this opportunity to appear before you today.

[The prepared statement of Mr. Levin appears at the conclusion of the hearing, see p. 42.]

Chairman **Leland**. Thank you, Sandy.

Representative Scheuer.

STATEMENT OF HON. JAMES H. SCHEUER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. **Scheuer**. I want to commend you, Mr. Chairman, for having this very much needed hearing on the causal link between population and famine. It couldn't have come at a more opportune time because the daily newspapers and the daily 11 o'clock news that we see on our televisions dramatically exemplifies the very causal link that we will studiously be studying this morning.

As I look behind me to the witnesses you are going to hear from, I also want to congratulate you on your very astute and thoughtful selection of witnesses. These are the kings, the philosopher kings of the global population movement whom you have selected. The three of us have worked with them for years and years. We respect them and honor them. At least in my case, they have taught me much of what I know and none of the things that I know and shouldn't know.

I do want to say one word. When I started out in population work in the House, which was in 1965, when I started the effort to knock out the Comstock laws from off our statute books, and then continued in 1967 to 1970 to pass the 1970 Population Research and

Family Planning Act, there were always two brilliant, thoughtful, enlightened leaders of the Republican Party in the House of Representatives that I could invariably count on for the kind of thoughtful leadership and meaningful involvement that would make the difference. And without them, we would have been worlds behind where we are now. One of them has stuck the course and is continuing to do good work till this very day. The other may have strayed a little bit, but he'll come back eventually, won't he, John?

I do want to pay tribute to those two Congressmen, Congressman George Bush and Congressman Bob Taft. Bob is here today. That is a 20-year-overdue expression of my regard and respect for Bob Taft and, all kidding aside, to George Bush, too, for the terrific contribution they made in those early days, when it was so difficult to get enlightened involvement from any Member of Congress, let alone members of the Republican Party.

I am delighted to be here today. I commend you, Mr. Chairman, again for your foresight and your wisdom in calling this hearing. I, particularly, want to congratulate you on the excellent background and briefing papers that you prepared. I only would criticize one word in the whole bunch of them. In the background information, Population Growth Rates and Hunger paper dated June 6, in the fourth line, that sentence goes: "Understanding of the potential impact of continued high rates of population growth in the malnourished segments of humanity is essential to our efforts on this committee."

Mr. Chairman, if this is ever reprinted, please leave out the word potential. It's here. The impact of continued rate of high population growth rates on malnourished humanity is here. It's on our television screens. That's what the famine is all about in sub-Saharan Africa.

The famine in sub-Saharan Africa is really not about drought. Drought just happened to trigger it. What it is about is a growing discrepancy between food production and people, a gross and growing imbalance between food and people. A generation ago, all of sub-Saharan Africa was a food-exporting region. Every single country in sub-Saharan Africa in the immediate period following World War II were food exporters. Today, without exception, they are food importers. And it is not because they are producing less food. It is because the growth of population has far outstripped their food production, which has been increasing at a modest rate.

Today, food production in sub-Saharan Africa is estimated to be increasing at about 1.1 or 1.2 percent a year. Population in sub-Saharan Africa is increasing at about 3.5 percent a year, and several of those countries, including Kenya and perhaps one or two others, are estimated to be increasing at a 4-percent population growth rate, which the demographers will tell you is the highest theoretical population growth rate that the human species is capable of achieving.

So, very simple arithmetic will tell you that each year as we have 3.5 percent more people to feed and 1.1 or 1.2 percent more food to feed them, there is a growing cumulative annual per capita deficit in food availability of a little over 2 percent. Now, over the last 10 years we have had about a 10-percent per capita decrease in food availability in sub-Saharan Africa. But the next 10 years will see a 20-percent additional reduction in food availability.

The demographers tell us that the world will achieve population stability sometime around the year 2020. Well, that may be an interesting average, and there is tremendous progress going on in Asia and in Latin America, but certainly as far as sub-Saharan Africa is concerned—and attention has been focused on sub-Saharan Africa—it is highly unlikely that without the most massive efforts at thoughtful population policies in sub-Saharan Africa, that there will be anything close to equilibrium achieved there. So, that certainly is the crisis point in our policies in sub-Saharan Africa.

Now, what do we need to do? First of all, we need to increase food production. There is no question about that. This committee has looked at the needs and the wherefores and the possibilities for increasing agricultural production. We have a Nobel Prize winner, an American Nobel Prize winner living in Mexico who says that the greatest source of famine in sub-Saharan Africa is the Public Law 480 Program, because that has stimulated sub-Saharan African countries to price foods so low that their farmers engage in subsistence agriculture. That has a very detrimental effect on agricultural production.

Certainly what sub-Saharan Africa needs in terms of food production is assistance far different than that which the American agricultural research institution is capable of giving it. Our agricultural research institutions in the United States of America are mostly, almost entirely focused on the needs of agribusiness, on a farming community that is large scale, that is mechanized, that has very little, if any, constraints on capital, that has very little, if any, constraint on energy. And, of course, both irrigation and fertilization are very energy intensive and capital intensive.

In sub-Saharan Africa you have a whole different spectrum of needs. Those farmers can't use capital-intensive technologies. They can't use seeds or plants that require extensive irrigation or fertilization. What they need are technologies and small handtools for the small-scale farmer who has extremely limited capital, who needs blight-resistant and drought-resistant seeds and plants that can grow under very adverse conditions.

Chairman **Leland**. Let me interrupt you if I can, Jim. We have a vote. We have 7 minutes to get there. I would like, if I can, to suspend the testimony, and have you come back.

Mr. **Scheuer**. Let's do that.

Chairman **Leland**. We will be back in a few minutes.

[Recess.]

Mr. **Kostmayer** [presiding]. Congressman Scheuer, we are waiting for you to resume your testimony.

Mr. **Scheuer**. Mr. Chairman, I was hoping you would accede to a significant chairmanship in the field of population. I am delighted to see it has taken as little time as it has.

Let me just wind it up by saying that the link between population and famine is glaringly self-evident. It explodes off the television screen. It explodes off the front pages of your daily papers. It explodes in the mind of any thinking person.

We must help the countries of the world, of the developing world particularly, control their exploding population growth rates. Wonderful progress has taken place in Asia and in Latin America. They have learned how to do it for themselves. They have begun on a big scale to understand the need for it. In Latin America the largest two countries, Brazil and Mexico, just in the last year or two have done an absolute turnaround, 180 degrees, from pro-natalist, anti-family-planning policies, to anti-natalist, ardently pro-family-planning policies. You could list a dozen countries in Latin America that are doing this. In Asia, progress is taking place all over the place: Hong Kong, Singapore, Thailand, South Korea, Taiwan, and Indonesia.

It is perfectly evident that there is no religion, that there is no race, that there is no ethnic group in the world for which thoughtfully conceived and well-managed family planning programs are not acceptable.

The one deficit area, the one barren desert is sub-Saharan Africa, where I believe there is probably not a single country where as many as 5 percent of the women in childbearing years are under any kind of systematic regular family planning programs. If I am wrong, I wish somebody would correct me. I would be delighted to know that I was wrong.

There have been plenty of experiments in sub-Saharan Africa. I have been across Africa. I have seen where they have an occasional family planning clinic, either a freestanding clinic in a rural area far from a major city, or a clinic like the Mama Yemo Hospital family planning clinic in downtown Kinshasa in Zaire. Wherever they have a family planning clinic or a family planning service, the crowds and the lines stretch out into infinity, such is the demand.

It is sometimes more politically acceptable to provide family planning in a constellation of maternal and child health services; freestanding family planning clinics are sometimes available. It is also tremendously important to provide the motivation for women to want to control their fertility. In a region where for hundreds or thousands of years women have perceived society to be valuing them by the number of children they produce and the regularity with which they produce an infant each year, you can sprinkle condoms from the heavens, as it was our State Department policy to do in recent years, and women will not allow use of condoms or any other family planning device because they don't want to be ostracized. They don't want to be shunned for having abandoned their only major significant traditional role, which is childbearing.

But when a country begins to send its little girls to school along with the little boys so that when they grow up they have access to higher education, college, the job market, credit so they can buy a little stall in the downtown marketplace, when they raise the age of marriage from 10 or 12 to 18 or 20, then women understand that society is offering them a number of life options. And they gladly begin to control their fertility. They gladly sharply reduce family size goals.

Unfortunately, what we are talking about is not just a simple matter of providing contraceptives, although that is absolutely key to everything else, but it is also a question of changing the perception of women, of who they are and what they are about, and how society values them. It is a question of changing the viewpoints of men, especially in sub-Saharan Africa, of educating young couples into responsible parenthood and changing the view of young boys and young men as to what their wives are all about and how they can lead happy, rich, productive lives in ways that will not overburden them and will not overburden their countries with the kind of excessive population growth that they have seen up to the present.

This is an enormous challenge. I am delighted to see members of the quality that I see at this hearing. It is extremely encouraging. I congratulate you for being here and taking time out of your busy schedules. I look forward, along with John and Sandy, to working with you in the months and years ahead.

Thank you very much.

[The prepared statement of Mr. Scheuer appears at the conclusion of the hearing, see p. 46.]

Mr. KOSTMAYER. Congressman, we thank you for your testimony and most especially for your leadership in this area as chairman of the Select Committee on Population in the 95th Congress and your leadership here in our own country and around the world as well.

The gentleman from Illinois.

STATEMENT OF HON. JOHN E. PORTER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Mr. PORTER. Thank you, Mr. Chairman.

I appreciate the opportunity this morning to join my colleagues, Jim Scheuer and Sandy Levin, who are certainly experts in this field, along with the entire room full of experts that you have to testify this morning. I have a statement that I ask that you include in the record. I will be as brief as possible in view of the schedules of your other witnesses.

Mr. Chairman, there has been a commitment through six administrations of both parties to voluntary family planning programs. The United States has taken a very strong position from the beginning when it became an issue, that no U.S. dollars would be used for abortion in any form. There have been repeated audits showing that this policy has been strictly followed throughout the history of our commitment to this program.

In 1982, I attended the Western Hemisphere Conference of Parliamentarians on Population and Development in Brasilia. I presented the remarks and greetings of President Reagan to the assembled parliamentarians who are concerned with the issue of population and development. I saw no change at that time in our policy. Yet, I have to say in all candor that, since that time, I have become increasingly concerned about the direction of U.S. voluntary family planning policy. I would like to touch on several of the issues that our country faces in this regard that I think are important for the future of this policy.

One change in policy which appeared at Mexico City ended up being one of emphasis though it originally was intended to be one of substance.

That was the presentation of our delegation at the U.N. World Conference, where 146 nations were represented. It indicated that while we retained a commitment to voluntary family planning, we really wanted to emphasize to the world that we can solve population growth problems if only we will attend to economic growth and get away from statist approaches that have, I think candidly, proved to be failures in the past. Our policy also emphasizes free enterprise individual incentives.

I believe in these principles. As economic growth improves, population rates do come down. Certainly, the approach of individual incentives is far better than the statist approach. But I think emphasizing this at Mexico City took away substantially from the commitment we had made over a long, long period of time to support voluntary family planning programs. I think we left in the minds of the delegates there from countries all over the world that we were no longer as strongly committed as we had been for a long, long time to these programs.

The United States announced a policy at Mexico City, which has been followed since that time, that we would no longer fund nongovernment organizations who used money from other sources in any way, for abortion. This includes any money that they had raised from other sources. Since that time, the International Planned Parenthood Federation has lost the commitment of the United States because they use 1 percent of their funds for abortion counseling or some of the agencies that they fund for performing abortions. Although 99 percent of their effort is in voluntary family planning areas, they have lost the entire commitment of the United States for funding.

This policy is a great danger to the future of voluntary family planning programs. It concerns me greatly. I might also say to the committee, and it ought to be considered, that this is a different policy than the one that we apply domestically at home. We apply a different policy overseas. When we say we are going to cut funding off to these nongovernmental organizations. We certainly don't follow that policy domestically nor, I think, could we. This policy has damaged our reputation and our commitment and our credibility in this area a great deal.

This will be a matter that will be on the front burner as Congress considers the entire question of funding in this area. I commend the gentleman from Pennsylvania for his efforts in raising that level of funding in this year's authorization bill that we will consider, presumably in the weeks just ahead.

Another issue that is even a greater threat that ought to be discussed is the whole question of China. The press has reported that China apparently has had a program that has elements of coercion in it, not only economic coercion, but forced abortions and, in some cases, infanticide. I think the fact that that program has been funded by the United Nations fund for population activities, UNFPA—which we fund—has the potential of destroying—and I use the word destroying specifically—the commitment that this country has made to voluntary family planning programs unless it is addressed very clearly and very specifically.

If you look at what has been done, the position of the Agency for International Development [AID] has been to cut off the funds for UNFPA to the extent of $10 million, which is the entire amount of funds that UNFPA spends for China. An amendment will come before this body today or early next week, dealing with this question which has within it the potential of cutting off the entire U.S.

commitment to the UNFPA programs all over the world because of China. I believe that the Congress and this committee should take a very strong position that we oppose coercion in any way, shape, or form in family planning programs. However, at the same time, we have to be very, very careful that, in opposing coercion, we don't destroy the entire longstanding commitment that this country has to voluntary family planning programs which are truly voluntary and engage in no element of coercion in almost every place in the world. The U.S. policy has, from the very inception, prohibited the use of funds for any form of abortion.

Finally, Mr. Chairman, we hear over and over again that technology will save us in this field. Technology will save us in reference to agricultural production. Technology will save us in reference to world population growth that is unchecked, because we are on the verge in the areas of contraception of providing new means that will prevent runaway population growth. And this may be true, Mr. Chairman. It may be true. But in the meantime, it seems to me, that this Congress and this country have to fashion a policy that will help alleviate the problems of famine and hunger through voluntary family planning programs. There has to be set up—and Jim Scheuer alluded to them—in every small village throughout the world—the means for families to space and have the number of children they want. This has to be a program that reaches out to individual families and to individual people in India and Somalia and Thailand and throughout the world. Regardless of what technology may do, there has to be a means of getting this technology to people, even if it is forthcoming.

So, I would urge the committee to lay these issues of voluntary family planning, the effect of the question of abortion, and the effect of the question of coercion before the Congress and before the American people in your report. It should take these issues up front and discuss them very specifically and reaffirm the commitment that this country will continue to fund and to be the world's leader in voluntary family planning as the solution to hunger problems, the problems of quality of life, and the future of life on this planet.

I think it is a terribly, terribly important area for your committee to consider. I certainly appreciate the opportunity to testify and particularly your concern to this important question.

Thank you very much.

[The prepared statement of Mr. Porter appears at the conclusion of the hearing, see p. 54.]

Chairman Leland. Mr. Scheuer.

Mr. Scheuer. I would like to underscore what Congressman Porter just said. He absolutely hit the nail on the head. To underscore the importance of his remarks, especially about the IPPF, tomorrow the U.N. Secretary General is holding a series of ceremonies and events to honor the IPPF for the enormously constructive and useful and humanitarian role, the lifesaving role—that it has played in over 100 countries around the world. Those ceremonies and the scheduling of the remarks that will be made—and I hope will be reported in the press—didn't grow like Topsy, didn't happen in a vacuum. They must be construed as a very pointed message that the United Nations is sending on behalf of the conscience of the civilized world community, a message that they are trying to send to the administration in Washington, the message that Congressman Porter so eloquently encapsulated just this morning.

Chairman **Leland**. Thank you. I would like to personally thank you all for participating and to ask my colleagues if they would have anything to add.

Let me say at this juncture, too, that I would like to thank our colleague from Pennsylvania, Mr. Kostmayer, for expanding the parameters of the committee and developing the issue of population as an integral part of our hearings and process. I now yield to Mr. Kostmayer.

Mr. **Kostmayer**. Thank you, Mr. Chairman.

I know our time is short, but I wanted to ask Mr. Porter this. You are known as a strong and outspoken opponent of abortion. I think, as you said, this program is really in very serious trouble. We could lose the entire U.S. contribution to IPPF, which is $17 million, or one-third of that organization's budget. We could lose in the foreign aid bill when it comes up, if it ever comes up, the entire U.S. contribution to UNFPA, which is one-third of that budget, or $46 million.

Are you convinced, as a prolife Congressman, that these funds are not being used for abortions?

Mr. **Porter**. Let me say, Peter, first, that I would not characterize myself as a prolife Congressman. I believe that abortion should never be used as a method of birth control or family planning. Yet, I also believe that abortion is a matter of individual choice and not State choice.

Mr. **Kostmayer**. I stand corrected.

Mr. **Porter**. So, let me correct you to that extent.

I am convinced that no U.S. dollars have been spent for abortion. I think that's absolutely clear. There has been study after study. The General Accounting Office has made clear the record and audited the use of these funds. And I don't think any U.S. dollars have been used for abortion. That has been our policy from the very beginning. We have assiduously followed it. I think it should remain our policy.

Mr. **Kostmayer**. Thank you.

Chairman **Leland**. Are there other questions of our colleagues?

I thank you all very much for your contributions. Thank you sincerely.

Our next witness this morning is well known and respected among all of those concerned with development issues. Mr. Lester Brown is president of the Worldwatch Institute. He has researched and written extensively on food, population, economic, and resource issues. His Worldwatch reports are widely read. I believe one on the decline in Africa is in progress currently.

Mr. Brown will report on the results of research into the nutritional and ecological consequences of current and projected rates of population growth. Mr. Brown.

STATEMENT OF LESTER R. BROWN, PRESIDENT, WORLDWATCH INSTITUTE, WASHINGTON, DC

Mr. **Brown**. Thank you, Mr. Chairman.

Like those who have preceded me this morning, I would like to commend you as chairman of the Select Committee on Hunger for focusing on population growth and its relationship to the problem of malnutrition. If those who have been concerned with hunger in the past had paid more attention to population, there would not be so many starving people in the world today.

In the interest of time, I would like to submit as testimony excerpts from our report, "State of The World 1985," dealing with these issues, that was released a couple of months ago.

Chairman LELAND. Please know that your full testimony will be entered into the record. We appreciate your summary of the testimony.

Mr. BROWN. Thank you.

What I would like to do is look very quickly at the relationship between population and a number of key resources including cropland, water, fertilizer, oil, technology, and even the relationship between population and climate.

Looking first at cropland trends, we see that the growth in cropland has slowed markedly over the past generation. I am going to refer to some of the charts in the testimony. I assume that the committee members have copies of this. On page 24 of "State of The World 1985" we have adapted some data from the U.S. Department of Agriculture, including their projections of world cropland growth over the rest of this century. What we see is that growth in cropland, which was averaging about 1 percent per year for the world as a whole during the 1950's, has slowed dramatically. The Department of Agriculture is projecting that, from 1980 until 2000, world cropland area will grow by only 4 percent. And this is during a period when population will grow by 40 percent. So, you can get a sense of how rapidly the population-land ratio for the world as a whole is going to be declining between now and the end of the century.

A third of the people in the world now live in countries where the cropland area is actually declining, countries like China and Italy, just to cite two examples. The reasons for the shrinkage in the cropland area in those countries where it is declining are, one, severe degradation to the point where the land is no longer agriculturally viable. A second reason is urban expansion, and that is a problem throughout the world. And a third, that does not get much attention, is village expansion.

There has been a fairly detailed study in Bangladesh, for example, of the relationship between the size of villages and the size of the population. It is almost a 1-to-1 relationship. In a society where the structural materials do not permit multistory buildings, as population and housing expand, they take up more and more land. In Bangladesh, which is basically a country of rice fields, the expansion of villages is at the expense of cropland.

One of the countries that is most concerned with the loss of cropland at the national policy level is China. As you know, most of China's billion people are in an area about 1,000 miles wide on the eastern coast of the country, an area roughly the size of the United States east of the Mississippi. Almost all of the industrial growth in China has been concentrated in this area. You have to build the factories where the people are, and the people are located near the good cropland.

The Chinese, when I was in Beijing just over a year ago, were having a subcabinet meeting on the problem of peasant housing. As liberalization of agriculture in China has proceeded, the peasants have begun to earn quite a bit of money. The first thing they do is build a new house when they get enough money. When you get a large fraction of a population of 1 billion building new houses, you can chew up a lot of cropland in a short period of time. So, they are actually trying to develop incentives to get peasants to build two-story houses instead of one-story houses, just to save that cropland.

Another example of the level of concern with cropland in China shows up in the burial practices. The Chinese Government is now actively encouraging cremation, which is a new procedure in China. Traditionally, there have always been the burial mounds. Given the ancestor worship, this has been an important part of Chinese culture. And that is changing now. They are actively and publicly promoting cremation as a way of conserving cropland.

The second resource very much influencing the food prospect is water. The world irrigated area between 1950 and 1980 nearly tripled, an enormous growth (See table on p. 28 SOTW 1985). Up until 1950, there were only 94 million hectares of irrigated land in the world. By 1982, that had nearly tripled, to 261 million hectares, an explosive growth. But that growth, too, is slowing and will not be expanding nearly as much as we move toward the end of the century.

As with cropland, we now have a few countries, including our own, where the irrigated area is now declining. In the United States the irrigated area, which grew rapidly from the end of World War II up through 1978, turned downward after 1978 and has declined by about 3-percent nationwide since then. There are two principal reasons: One is the depletion of the Ogallala aquifer in the southern plains, including importantly the State of Texas; the second is the loss of irrigation water to urban and industrial development, the Sun Belt phenomenon, if you will. Texas and Florida have each lost about a fifth of their irrigated area over the last 5 years or so. So, we are facing a very new situation here, where urban development is siphoning water away from agriculture.

A third resource that we need to be concerned with is fertilizer. World fertilizer use has increased nine-fold since 1950. It is probably the best single indicator we have of the growing energy intensity of world agriculture. As the population-land ratio declines, we compensate, or at least attempt to compensate for that decline by substituting fertilizer for cropland.

On average in 1950, we used 5 kilograms of fertilizer per person; this is for the world as a whole. By 1980, that had reached 25 kilograms. We are clearly in a situation now where further increases in world food output depend directly on the growing use of fertilizer and therefore the growing energy intensity of world food production.

On page 30, [SOTW 1985] there is a figure that shows rather graphically the relationship between cropland area per person, it shows it declining steadily since 1950, down by more than a third, and, at the same time, the way in which fertilizer use has increased in order to offset the effect of that decline.

Another issue—and this was touched on by Congressman Porter in what I thought was an outstanding statement—is technology. We look at technology with some hope, and justifiably. But in agriculture there has been a tendency to overestimate the contribution of the new biotechnologies that are unfolding so rapidly: Recombinant DNA, tissue culture, cloning, et cetera.

There is no question but that these new technologies are going to play a role. But I think they should be seen as a new tool in the researcher's tool kit and not as a quick solution to the problem of world hunger. They will permit researchers to achieve research goals faster in some cases and in some cases at less cost. But we have to remember that we are still dependent on the process of photosynthesis to convert solar energy into biochemical energy, into forms that we can use. And the basic chemistry of this process imposes the ultimate constraint on food production.

If we look at some of the trends in grain production in the United States, for example, turning to page 34, we can see both the potential and the limitations. This graph on page 34 shows the U.S. grain sorghum yield from 1950 through 1984. Grain sorghum, as you know, is our second leading feedgrain now after corn. Most of it is grown in the Southern Plains. During the 7 years between 1955 and 1966, our sorghum yields tripled, a dramatic increase. Three things were involved: The hybridization of sorghum, expanding irrigation of sorghum, and the intensive use of fertilizer.

Since 1966, sorghum yields have not increased at all. They have fluctuated but not increased. As we begin to lose the irrigation resources of the Ogallala aquifer in the Southern Plains, it is quite possible that at the end of the century U.S. sorghum yields will be less than they are today.

And in country after country, we are beginning to face this S-shaped curve in yield, that is, a period of rapid increase followed by a levelling off. We see it in corn yields on page 35 of SOTW 1985, for example, where U.S. corn yields between 1950 and the early 1980's nearly tripled and then since have increased very little. We can look at rice yields in Japan on the same page and see exactly the same S-shaped curve.

One of the questions that ties food and population together is the question of food security and what is happening to food security. If we look at page 37, we can see the change over the past generation. During the period from 1950 to 1973, world food output increased, in per capita terms, about 1 percent per year. That is, food production exceeded population growth from 1950 to 1973 by nearly 30 percent. So, this was a period when the rising tide of food production was raising nutritional levels throughout the world. There were very few countries in which nutrition did not improve between 1950 and 1973. That was a unique historical period.

Since then, there has been very little increase in per-capita grain production for the world as a whole. It is a combination of both supply-side constraints and limited growth in demand.

One of the reasons that grain production growth has slowed from something like 3 percent before 1973 to roughly 2 percent since then has been rising production costs, particularly those inputs that involve the use of energy.

On the demand side, per capita income for the world as a whole has not increased very much at all since 1973. That is, world economic growth has been keeping up with population and gaining a little, but not very much. So, per capita income has not increased very much. And when per capita income is not increasing, per capita food consumption does not increase much.

Perhaps the most disturbing development on the population front recently has been the growing realization that population growth may now be inducing climate change in some parts of the world, most importantly Africa. Almost all of the land-use changes associated with population growth such as deforestation, either to clear land for agriculture or because of a firewood shortage, or overgrazing, or clearing land for agriculture, all of these changes have the effect of increasing rainfall runoff and reducing the amount that is retained and evaporated into the atmosphere to recharge clouds.

If I can use a very rudimentary meteorological model, I would simply point out that there is a complementary relationship between trees and clouds. Trees take liquid water from under the soil and convert it into water vapor through transpiration. That water vapor enters the atmosphere and collects in the form of clouds. Clouds take that water vapor and under the right conditions convert it into liquid form. It becomes rainfall. So, you have this complementary relationship in the hydrological cycle between trees and clouds. When you take the trees out of that system, as is happening all across Africa now, that cycle is affected.

We do not yet have the sophisticated meteorological models incorporating the changes in land use over the past generation such as deforestation and the changes in rainfall patterns. But there is now a growing number of meteorologists who think that the scale of human-induced land-use changes in Africa are now large enough to be affecting climate, specifically, to be reducing rainfall. If that is happening, then we have before us a challenge in Africa that has no historical precedent.

I could go into more detail on what is happening in Africa, but I understand that the committee has hearings scheduled sometime next month on this, so I will pass in the interest of time.

The final two points deal with population, population policy specifically.

The demographic transition, which is a device used by demographers to explain changing rates of population growth, is useful in looking at what is happening in the world today. As you know, there are three stages in the demographic transition. In the first, you have the very traditional societies, premodern, that have high birth rates and high death rates and very little population growth because birth and death are in balance at a high level.

In the middle stage, death rates come down, but birth rates remain high; and you get rapid population growth. That is where you get the 3-percent rate of population growth. That is where a good part of the Third World, almost all of Africa, is today.

Then the third stage, you get birth rates coming down to come into balance with death rates, and again you have population stability. Much of Western Europe has reached that point. There is very little population growth in Western Europe because births and deaths are in balance but at a very low level.

Historically, we have always thought of the demographic transition as being a progressive thing. Countries went from stage 1 to stage 2 and then eventually to stage 3 as living conditions and access to family planning services improved. What is beginning to happen now is that some countries in the middle stage are getting trapped there over an extended period of time, long enough that rapid population growth is beginning to undermine the resource base through soil erosion, deforestation, desertification, et cetera. And per capita food consumption is beginning to decline, as it has been in Africa now for a decade and a half. And countries are losing the demographic momentum that would have carried them into the final stage, as the industrial world has done, for example, and as China is doing. They are beginning to fall back toward the first stage as death rates rise.

The most recent tabulation, for example, by African governments indicate at least 1 million lives lost to starvation just over the past year. That number is increasing.

The real risk is that those countries that are in the middle stage, that have the 3-percent rates of population growth, which is twentyfold per century, are going to lose momentum and not make it into the final stage and begin to fall back toward the first. There is evidence that that is now happening in Africa. This is the first time that this has happened, historically.

This is one reason why it is so important that the groups that are providing family planning services, such as the International Planned Parenthood Federation and the U.N. Fund for Population Activities, be able to help these countries now. There has been a sea change in Africa in interest in family planning services and the population issue over the last 18 or 24 months.

I was in Zimbabwe last month and learned that the Government of Zimbabwe had underestimated the growth in demand for family planning services and for contraceptives and, as a result, was almost out of contraceptives. The supply of pills was down to a 2-week supply, for example. They requested an emergency air shipment of contraceptives from the U.S. AID mission in Zimbabwe. Now, in a continent where we have been hearing about emergency food shipments, I think that was a refreshing development. But there are some changes.

I think it is terribly important, as the Congressmen who appeared on the panel before me have indicated, that we respond to these needs. It is literally becoming a matter of life or death.

The final point is that I think in many situations governments have failed to understand the gravity of the population problem and have waited too long in trying to get the brakes on population growth. This is exactly what happened in China, where for ideological reasons, for at least a couple of decades they ignored the population problem, believing that more people was a good thing, and ignoring the possible negative consequences of unlimited population growth.

The result was that the Chinese by the late 1970's found that they had to choose between an increase in population of several hundred million that would undermine and reduce their living standards, or they would have to launch a very aggressive family planning program, which took the form of the one-child family.

In looking at other parts of the Third World and at Africa in particular, I sense that many countries are waiting too long. The alternative to the China model of sharply reducing birth rates, with a one-child family program, is probably the Ethiopian model, where agricultural support systems collapse and death rates rise. As a result of having waited too long, I think many governments are now going to have to choose between either the China model, slamming on the population brakes, or the Ethiopian model of watching death rates rise. I think that is the real choice.

That is why the hearings that you are holding are so terribly important and why I commend you strongly for doing so.

[Excerpt from State of the World—1985 submitted by Mr. Brown appears at the conclusion of the hearing, see p. 59.]

Chairman **Leland**. All the plaudits for this hearing really go to our colleague, Peter Kostmayer. I yield to him now for questions he may have. I will hold my questions.

Mr. **Kostmayer**. Thank you, Mr. Chairman, very much.

I appreciate, Mr. Brown, your very exhaustive testimony and your important work in this area and especially the linkage between the factors you talked about in such an expert way and the problems of population. I think, as I am sure you do, that we are headed for really serious problems if this country, the leader of the free world, reduces substantially, as we are about to, our funding to international organizations and agencies which participate in voluntary family planning around the world. I think it would be a major mistake, and I am sure we will see the consequences not only in population growth but in all of the other factors which are linked to population.

I thank you for your testimony and for your important work in this area.

Mr. **Brown**. Thank you.

Mr. **Kostmayer**. I wish I knew one-tenth as much as you about anything.

Mr. **Brown**. How do I respond to that, Mr. Chairman?

Chairman **Leland**. Just smile.

You spoke of cropland shrinkage. Is there any method to restore the lands that have been severely degraded by the process that you alluded to?

Mr. **Brown**. It is technically possible to restore lands that have been degraded to the point that they lose much of their productivity, but it becomes very costly. In northern Ethiopia, for example, where I was in late April, there are, in the highlands of Ethiopia, where the land is often very steep, there are areas where the soil is gone entirely; there is only rock left. So, you can create soil out of rock. I mean, soil is just rock that has been broken down through weathering. You can put pieces of rock in a machine and pulverize it, and you can make soil. But it is a very energy-intensive process. It is a lot cheaper to keep what you have rather than to have to try and create soil where none is.

Realistically, once the soil is lost through erosion, and you are down to bare rock, agriculture is finished.

Chairman **Leland**. It's just dead altogether?

Mr. **Brown**. It is.

Chairman **Leland**. Therefore, in those areas in Ethiopia, there is no sense in looking at opportunities to try to restore agricultural productivity?

Mr. **Brown**. No, there are some areas where there is enough soil left that, if it is conserved with terraces and managed properly, agriculture will recover and will gradually improve over time. But there are some areas where it is gone. You find this not only in Africa or Ethiopia, but in Latin America, where if you travel in the Andean countries, and look up the mountainsides, you see 30 percent slopes that are being cleared and plowed by land-hungry peasants. And you know full well that, if you come back 15 years later, there will be no farming on those mountainsides; it will just be bare rock.

The key is to hold the soil and to conserve it while we have it, rather than try to somehow get it back after it's gone.

Chairman **Leland**. This is frightening.

Mr. **Brown**. It is indeed. Soil erosion could be the world's most serious environmental problem and one with profound economic and social consequences.

Chairman **Leland**. It's incredible.

Are the climatic changes which you have spoken of a unique threat to heavily populated regions in the Third World, or do they also threaten areas of relatively low-population density, such as Zaire, Angola, Zambia, and the Ivory Coast?

Mr. **Brown**. The climate changes in Africa do not affect so much those countries in the Congo basin rain forest area, which includes Zaire and the Republic of the Congo, for example. They are much more a problem in the Sahel zone, the West African countries from Senegal all the way through Nigeria and the Cameroon, across Africa, and all down the eastern side of Africa, and all of southern Africa and the northern tier of countries as well, along the Mediterranean. At least 85 percent of the people in Africa live in countries that are potentially affected.

Let me add one final point there. That is that this is such a new idea, that the climate in Africa could be changing as a result of the massive land use changes, that we haven't had a chance to do enough research to confirm it absolutely, nor have we even begun to consider what happens if the climate of Africa changes markedly and how that will affect the global climatic system. The global climatic system is one system, and you cannot change part of it, certainly not an area as large as Africa, without adjustments occurring throughout the entire system.

Chairman **Leland**. Mr. Brown, I would like to spend a whole day with you sometime to learn more about these issues. As my colleague has indicated, your responses have been most exhaustive and very thorough; we really appreciate your efforts.

I thank you for your contribution.

Mr. **Brown**. My pleasure. Again, keep up the good work.

Chairman **Leland**. Thank you.

To complete our discussion today on the link between population growth and hunger, we will hear from three gentlemen who have distinguished themselves in the area of population and development issues. Mr. Phil Claxton is president of the World Population Society and director of the RAPID II project for the Futures Group. He will lead off our panel discussion. Mr. Claxton will be illustrating the consequences of projected population growth and projected food production increases on the health and nutrition of vulnerable population segments.

Mr. Claxton will be followed by Ambassador Edwin Martin, former Under Secretary of State and Ambassador to Argentina. Mr. Martin serves on the board of directors of the Population Crisis Committee and the Draper Fund. Mr. Martin will address the obstacles to successful family planning programs at the national and family levels.

We are most fortunate to have former Senator Robert Taft, Jr., with us today to share his knowledgeable views on the U.S. Government's policies and programs in the population area. Senator Taft, a former member of the House of Representatives as well as the U.S. Senate, devotes considerable time to the world population growth problem and has taken an active interest in health and nutrition issues.

We are most pleased to have all of you with us. Mr. Claxton.

STATEMENT OF PHILANDER P. CLAXTON, JR., PRESIDENT, WORLD POPULATION SOCIETY, THE FUTURES GROUP

Mr. Claxton. I want to thank the committee and express my appreciation and admiration for this hearing being held on an enormously important subject that affects people all over the world. I also thank you for the work that you have done in the past, focusing so much of the attention of this country on the terrible crisis in Ethiopia and making possible the help that has gone to so many unknown thousands of starving and helpless people. It has been a blessing for the people of the United States as well as for the people of those countries.

The excellent testimony which has just been heard has dealt with the relationships of population growth to food, nutrition, and health, on a broad scale. I would like to reduce this to focus on one country, one large, vulnerable group in the country, and the individual family in that country, all of which are illustrative of what is happening in many other countries in the world. I have chosen for this purpose Nigeria, the most populous country in Africa and in many ways a leader. I want to use for this illustration the analysis of a program called RAPID, which is an acronym for its full name, Resources for Awareness and Population Impact on Development.

This is a project of the U.S. Agency for International Development. Mr. Chairman, you referred to the fact that Congressman Levin at an earlier period in his life was the Assistant Administrator of AID for programs which included the Population Program, and this program was developed at the time that he was there. He was very responsible for, among others, developing it.

It is a form of computer analysis of population factors for individual countries and the effects of those factors on the ability of the country to attain economic and social goals. Among those, of course, it deals with the effects of population factors on agriculture and food availability.

Let's turn first to the basic demographic factor in Nigeria or any other country, which is the present population and the potential population growth. In Nigeria the present rate of growth is about 3 percent per year, which is typical for African countries. That means that the entire population of the country will double in approximately 23 years. That means that, just to maintain the present standard of living, it will be necessary to double all of the schools, all of the social services, the agricultural production, et cetera, in 23 years.

What is called the total fertility rate, which is the number of children the average woman has during her reproductive lifetime, is 6.3, which means that roughly about half of the women in the country will have more than six children and half will have fewer than six children, an average of 6.3. Now, if we assume that the high level, 6.3 children per woman, is continued into the future, the population growth of Africa would look something like this.

[Visual presentation. High line in chart 1.]

Mr. CLAXTON. At present, there are about 98 million people in the country. With high fertility continued, in 30 years, by 2005, it would be 298 million, nearly up three times. In only 15 years more, it would be half a billion, 500 million people.

Now then, if it were possible for the people of Nigeria by conscious effort—and it would be a very large effort—to reduce that fertility rate from 6.3 per woman to a three-child family average by about the year 2005, 30 years—a tremendous effort but not impossible—then the population growth of Nigeria would look something like this.

[Visual presentation. Lower line in chart 1.]

Mr. CLAXTON. By 2005, there would be about 90 million fewer people than with high fertility continued. And by 15 years later, 2030, instead of 500 million, it would be something like 250 million, obviously an enormous increase, even with this lower fertility level. But it is an awful lot more likely that Nigeria will be able to deal in a reasonable way with a population growing at this rate rather than growing to 500 million, if they should survive by the year 2030.

What effect will these different rates of growth have upon the ability of country to provide food for its people? Let's turn to another illustration. We look at the production of basic foods in the country, which for Nigeria are cereals, roots, and tubers, the production of food into the future and the demand for food. As has been said earlier, Mr. Scheuer pointed this out, up through the 1960's most countries of Africa were self-supporting in food. This was true in Nigeria. It even had substantial export crops. But beginning around the 1970's, the rate of increase in production reduced to about 1 percent per year. And between 1980 and 1985, there has been an actual 4-percent drop in total food production, not per capita but total food production has dropped 4 percent.

During that same period, they had their fourth 5-year plan, 1981 to 1986. It was anticipated then that food production would increase 3.7 percent per year. As I said, it actually decreased. But we have made a projection into the future assuming, as they did in their national plan, that food production could increase 3.7 percent per year. So, the production which in 1985 was around a level here would increase at 3.5 percent, as you see on the chart. I won't go into all the figures. You have them in some notes that have been distributed to you. (See stepped line in chart 2.)

Let's look at what the food requirements would be for the population of 98 million in 1985 first under the assumption, the fact of the present high fertility rate.

[Visual presentation. First bar A in chart 2.]

Mr. CLAXTON. About 12 million tons of food were produced of these basic commodities. The requirement for food in 1985 will be about 14 million tons. Two million either will not exist or will have to be imported. This will be continued into the future. Even with the 3.7-percent annual increase, which is totally unrealistic, there would be a requirement by the year 2015, 30 years from now, for about 25 to 30 percent of the food required by the population growing at that rate to be imported. (Bar A for 2015.)

If a lower fertility rate, as I mentioned a while ago, reaching a three-child family average by 2005, could be achieved, then the food requirements would look like this.

[Visual presentation. Bar B for 2005.]

Mr. CLAXTON. And by 2015, there would be a slight surplus. (Bar B for 2015.)

Now, as I said when I was speaking to some of the cabinet officers in Nigeria about this a couple of months ago, we ought to look at a more conservative anticipation of food increase in view of what has actually happened in the past. So, let's change the annual rate of growth from 3.7 in the future to 2 percent in the future, which in itself is a very optimistic rate.

So, we look at the same set of figures. As you can see, 3.7 is being used as shown on the screen, as the estimate. And now that is being changed to 2. So, using a 2-percent annual increase anticipated, the food increase would look like this chart.

[Visual presentation. See stepped line in chart 3.]

Mr. CLAXTON. Instead of reaching the anticipated level of 3.7, which you saw before, the increase would be something like this, with high fertility continued by 2015, something like 55 or 60 percent of the food required by the people could not be produced, would not be produced in Nigeria. They would be producing only 45 or so percent. (See bar A.)

With a lower fertility rate achieved by the year 2005, the requirements would look like this.

[Visual presentation. See bar B for 2015.]

Mr. CLAXTON. Still more than could be produced under this assumption of a 2-percent annual increase but not a great deal more. It is possible to buy at least part of it abroad, as contrasted with the enormous increase beyond their own capacity to produce if high fertility were continued.

Now, the Food and Agriculture Organization has done a very interesting thing in Nigeria and some other countries which they published in a study called Land Resources for the Future. They have tried to look at the basic carrying capacity of the lands of a country, carrying capacity in terms of food production.

So, for Nigeria they have made an analysis. They have concluded that it would be possible under the present technology of agriculture, the bush fallow system, which involves, as you know, taking land from the bush, much of the trees and shrubs being destroyed by burning and cleared, and which requires that there be 2 or 3 acres lying fallow each year for 1 acre under production. This is important to realize. Sometimes people looking at the landscape in Nigeria see a field here and many other fields not used. One could easily get the impression that there is a lot of unused land. Not so. For every 4 acres of land used continuously, 1 can be used at a time, and it goes around and around.

In actuality, the estimate made by the Food and Agriculture Organization for the population of Nigeria which could be supported while sustaining the land which exists and is in production would be around 50 million, not the 98 million there. They are sustaining the 98 million population essentially by overusing the land. It is turning into the kind of degradation which Lester Brown mentioned a while ago.

So, let's see what population could be sustained into the future following the bush fallow methods of technology. With high fertility, it would look like this.

[Visual presentation. See bar A in chart 4.]

Mr. CLAXTON. Where the bar goes above the land, it represents the population that can be sustained only by further degradation of the land or the importation of food, as you saw a while ago.

With a lower fertility level, it would be something like this, still far beyond the ability of the land to maintain the people under that technology.

[Visual presentation. See bar B in chart 4.]

Mr. CLAXTON. So, the FAO then made an estimate of what population the land available for cultivation in Nigeria could support under an intermediate technology, the technology which has been used by large farming areas in the Far East and in Latin America. So, with that improvement in technology, the increase in productive capacity of the land would look something like what you will see on the screen. [Stepped line in chart 5.] But with the same population growths of high fertility, low fertility, which we saw before, the demand for food, the numbers of people requiring food would grow as you see now, with high fertility——

[Visual presentation. See bars A.]

Mr. CLAXTON [continuing]. And with lower fertility.

[Visual presentation. See bars B.]

Mr. CLAXTON. So, even with this assumed enormous increase in the productivity of the land from its present method of technology to a much higher level of technology, there would still be an excess of population above the food productivity of the land in Nigeria. With a lower rate of population growth, it would be possible to feed the people, if that intermediate level of technology could be achieved.

Let's turn now to a very vulnerable part of the population of any country: mothers, infants, and children under the age of 5. In Nigeria now, out of the 98 million people, there are about 40 million in this group of mothers and children under the age of 5. What we want to do is to look into the future and see how many of this vulnerable group there will be with high fertility continued and with the lower fertility rate which we have assumed as a possible alternative.

[Visual presentation.]

Mr. **Claxton**. Each one of these little figures represents 7.5 million mothers and 7.5 million children. So, we will take a look at the situation as it is now.

[Visual presentation.]

Mr. **Claxton**. There were approximately 40 million mothers and children, mothers and children taken together, in 1985. Now, let's go into the future to 2015 and look at the numbers that would be generated if high fertility continues.

[Visual presentation. Bars labeled A in chart 6.]

Mr. **Claxton**. About 117 million.

And with lower fertility——

[Visual presentation. Bars labeled B.]

Mr. **Claxton** [continuing]. About 15 million fewer mothers and about 30 million fewer children, a difference of 40 or 45 million in that short period of 30 years.

Now, that enormous increase in numbers will be difficult enough to carry but will be more within the range of possibility in terms of nutrition and health services than the much larger number, 40 million more, if the high fertility levels should be continued.

One other way of looking at this matter is even more minimally toward the individual family. Any family in any country, but particularly in developing countries among poor people, can allocate only a certain amount of its total income to food. It, obviously, has to have other uses for its income, requirements which must be met. The typical family, at least in the 30 or 40 or 50 percent of the more impoverished group in a developing country cannot allocate more than, say, 50 or 60 percent of its small income to buying food. And one can measure the number of calories in a particular country which can be bought by 50 to 60 percent of the income of the people in that, let's say, 40 or 50 percent of the poorer levels of the area.

What we could look at now is the number of calories required to provide a standard minimum level of nutrition for a family with six children and, alternatively, a family with three children in the future. The family with six children would require calories as indicated in the bars here and with numbers on the paper you have in your hands. [Solid bars in chart 7.] Into the future, with the children born every 2 years, 1, 2, 3, 4, 5, 6, and carried 4 more years into the future. Now, with a lower fertility level and a three-child family born 2 years apart, the requirements for calories would be as you see in the green bars. [Open bars in chart 7.]

Now, I mentioned earlier that 45 or 50 percent of the families of the people in the poorer levels of any of these countries—and this is true of Nigeria—could buy no more than the food which would provide a standard minimum for about the level of four children, a line going somewhere along here, [pointing to requirements of family with four children] varying slightly. And the food requirements and calories above that line simply wouldn't be available. And this is the malnutrition or the undernutrition, as it is often described, which is simply starvation, among individual families in the countries.

The RAPID analyses cover a great deal more in terms of the effects of population on food, on education, on health services, and so on. They are all available to you for about 45 countries for which they have been made. They are in the public domain if you would care to go into them in any further way.

Let me just make two remarks in closing. First, I use Nigeria because it is such a prominent country in Africa. It is by no means the poorest country in Africa. It is far from the country with the worst food situation. Dr. Brown has described quite accurately the situation in countries in the Sahel. If the situation in Nigeria is dire, it is desperate in those countries by comparison.

Second, I have talked about the relationship of population factors to the availability of food and nutrition and health services. I want to make clear that that emphasis is only because that is what is being focused on at the moment here. I do not suggest at all that a reduction in population growth rates by itself will solve these problems. But I do say that, even if the other problems involved of the kind that Dr. Brown referred to are solved, it will not solve the food problem unless the population growth rate is radically reduced in these countries.

Thank you.

RESPONSES TO QUESTIONS FOR PHILANDER P. CLAXTON, JR.

QUESTIONS SUBMITTED BY HON. MICKEY LELAND

Question. Given the data you have shared with us, it would seem all to certain that the horror of the famine currently gripping Africa will be with us on a reccurring basis. Is famine going to be a permanent condition in certain African countries?

Answer. Famine will certainly be a scourge of many African countries for many years. The real questions are: Can it be kept from getting worse? How can it be reduced? Several years of drought have precipitated the current crisis. However, there are longer term underlying factors.

The rapid population growth of these nations in the recent two or three decades has already overpopulated them in terms of their bush-fallow agriculture. Production has been discouraged by economic policies favoring urban dwellers at the expense of rural people. In several countries, conspicuously Ethiopia, civil warfare has driven farmers away from their land.

Theoretically some of these negative conditions could be changed rather quickly. Economic policies could be reversed. Civil war could be ended. In 10 to 20 years agriculture practice in significant areas could be brought to levels of intermediate technology. Unfortunately, however, if present fertility levels continue—an average of 6 or 7 or 8 children born to each woman—all these improvements will not be enough. However, if at the same time, vigorous and effective population programs could be started, reducing fertility levels 50 to 60 percent, food production and population growth might be brought substantially into balance.

Question. What are some of the recent global economic trends that are affecting the number of malnourished people in the world? How are these trends likely to affect population growth rates?

Answer. Malnourishment is essentially a function of poverty—although ignorance or rejection of good nutrition practices has a role. Two major global economic trends have had a major effect on perpetuating and even increasing poverty in developing countries. One is the extortionate increase in the price of oil perpetrated by the OPEC states. The demands on limited foreign exchange and the effects on development in many countries has been serious to catastrophic. The general global economic recession of recent years has depressed prices for export goods of developing countries. The concentration of large multinational agribusiness organizations on the production of export crops, such as soy beans, has taken substantial amounts of land out of production for domestic food uses and has deprived many farmers of a livelihood. The global arms race, by diverting immense funds, has limited the amounts available for aid to developing countries that might be used for modernization of family farming. All these trends have decreased the ability and willingness of governments to start or extend national population programs. They make it even more essential to show and convince national leaders of the highly advantageous cost/benefits of such programs compared to other sectors of economic development.

Question. How quickly can population growth rates be reduced assuming the political will to do so exists?

Answer. The progress of reducing population growth rates is difficult and slow to start. Nevertheless, experience in several countries in the Far East, North Africa, and Latin America have shown that it can succeed. The degree of success depends on two major factors: the socio-economic level of the country and the strength of the population/family planning program. A number of countries with high or upper middle economic settings and with strong or moderate program efforts have made considerable progress in the 20 years since the mid-1960's. Indonesia in the lower middle economic level has achieved a very substantial reduction in fertility levels through having a strong population/family planning program. The problem, however, is that the countries which are already suffering most from food shortage and will continue to do so are the countries of sub-Saharan Africa which are at the bottom both in socio-economic setting and through having weak or no population programs. If, however, these countries could summon the political will to carry out the kind of population program they must have to survive, they would be able to reduce their average fertility rates from 7 or 6 to 4 or 3 in about 20 years—and another point or half-point in another 10 years. If they do not do this, their situation will almost certainly worsen.

[The prepared statement of Mr. Claxton appears at the conclusion of the hearing, see p. 90.]

Chairman LELAND. Thank you very much.

Ambassador Martin.

STATEMENT OF AMBASSADOR EDWIN M. MARTIN, POPULATION CRISIS COMMITTEE

Mr. MARTIN. Thank you, Mr. Chairman.

I want to join others in congratulating this committee for both its general work and for its focus on the population aspects of the hunger problem. They are very important.

As you indicated, I will address the question of some of the obstacles to reducing the population growth rate more rapidly. We have a situation in which for some time now, and it was confirmed at the Mexico meeting, nearly all the developing countries agree that they have a population problem and are, with varying degrees of energy, trying to bring the growth rate under control. However, many are finding it a very difficult matter.

Basically, the main actors in this operation are the governments on the one hand and the families on the other. Both of them are, however, influenced by outside considerations. I think the one probably most talked about is the religious attitude toward this issue. We here, of course, hear most about the position of the Vatican. I would point out that I think this can easily be exaggerated and may perhaps hide some other more fundamental factors. The four Catholic countries of Europe, Italy, France, Spain, and Portugal, all have growth rates of 1 percent or less. In Italy and France, abortion is legal.

In Latin America we find very substantial progress in reducing population growth, even in some of the most Catholic countries. Argentina is one of those, and it has been under 2 percent for a good many years. Colombia has made great progress in reducing it, although it is a very religious country traditionally.

So, I do think that, particularly when you get to the village priest who knows the score, this is not a major issue to the degree that we sometimes consider it.

On the other hand, in the very large populations which are of the Islam religion, we do have greater difficulties, in my judgment, in dealing with the population issue, not so much because of the position of the religion as such as because of the place in which it puts women in the family decisionmaking process. This is, in my judgment, the critical factor.

On the other hand, I would point out that there are Moslem countries that have succeeded rather well in their population programs; for example, Indonesia in recent years and Tunisia under a modernizing program led by Bourgiba. So, this is not an insoluble difficulty, as people sometimes suggest it is.

There have been some cases where people think more is better, more is more power. I think that is dying out, although we have recently had a regression in Malaysia. Having had a fairly good population program, the government has suddenly decided that they must have 70 million people sometime toward the end of the next century. It is the only case I know of in which we have had this kind of a turnaround. I think it has been induced in part by the fourth factor that I want to mention; namely, the ethnic considerations, or cultural differences.

I think the tribal competition in Kenya is one of the factors there. They want to each have more people. We have had this problem between the Muslims and the other religions in Nigeria as well. In Malaysia it is a Chinese-Malaysian competition that is a critical element in the attitude toward family size, in my judgment.

I think that we also from time to time will find emphasis on the need for children for social security. This is a real problem. What we need here is to educate people and to proceed with development so that two children who are well educated and healthy will be seen as better social security than six who are malnourished, uneducated, and not able to help in the old age of the parents. It is a process which is proceeding but it takes a while for people to realize that it is happening. This is one of the justifications for certain kinds of demographic research, to show what is happening to death rates, infant mortality in particular, and to the opportunities that children may have in the future.

The last one is a very minor one, but exists particularly in Latin America. There we have a situation in which in a number of countries the Catholic hierarchy and the Communists have joined together to fight family planning programs. The Communists say, "Just let us take over, we will increase income, divide it equally, and people will all have small families." And they point to the Soviet Union, the eastern European countries, and Cuba particularly, they nearly all have population growth rates of under 1 percent. In the Soviet Union, this is primarily true of the White Russian area, as the eastern or more Moslem part of the country has a relatively high growth rate, which is creating some stresses and strains in that society. But I don't think that this is a major global issue.

As far as governments are concerned, I would stress two points. One, with most of the population living in rural areas, often 70 percent or more in developing countries, a particularly high figure in

Africa, many government bureaucracies are inexperienced and inefficient, and thus unable to reach out into rural communities with any kind of services, whether it's agricultural technology or family planning. By and large, the educated people in the country want to live in the capital and not work in villages. They are often unable to talk to villagers, let alone listen to them, which would be useful to becoming more effective. So government inefficiency is a major obstacle. We have seen a certain amount of bureaucratic inefficiency in this country from time to time. The Congress has shown it up now and then. The developing countries have a much greater problem than we have even now.

I think, too, that another contribution to government ineffectiveness is the tendency, quite logically, to put family planning in the ministry of health. Ministries of health are usually staffed by doctors. The profession of medicine does not require the characteristics of an efficient bureaucrat. There is very little overlap. This creates some serious problems. Furthermore, the doctor wants to be challenged for his skills. Curative medicine challenges skills. Preventive medicine, like family planning, tends to be routine. Therefore, he gives it a low priority.

Furthermore, there is often an unwillingness to trust paramedics, traditional doctors, midwives, with the routine family planning procedures which they can perform well. And they do work in villages, which M.D.'s do not.

I think then one of the big needs is to get out and reach the countryside, using whatever health facilities are set up there to provide not just curative care but also the preventive measures which include family planning.

Second, governments are very scarce of resources, particularly the local currency resources, which are the major need in delivering family planning messages and services to a widely spread population. It has a benefit that is in the future and thus it is hard to persuade people that it may be more important to reduce the birth rates of a country than to build new roads or to put in a powerplant or build an industry. It is a question of priorities, both politically, particularly politically but also otherwise. Therefore, they need help from outside financially to support the family planning programs that most of them are willing to undertake but don't find the means to do so.

At the family level, I would just have two basic points to make. One is that in most societies—and cultural differences will not make this true everywhere; none of the points I have made are true everywhere in the same degree—the men control family decisionmaking. And men, by and large, are not easy to persuade of the advantages of small families. A large number of children proves their virility. They also wish to have their name carried on, as the man's name is what is carried on. They sometimes are not very careful about the health of the female members of the family, paying little attention to the fact that too many children, too frequently, too early, too late, is very important to women's health. You have seen that if you have studied nutrition. It is the female members of the family that are malnourished much more often than the male ones.

Furthermore, we know that in some countries the men think if their wives are protected, they can deceive them. There was a recent study very well done in Mexico of women who were practicing modern family planning. One-third of them thought their husbands didn't know it. This suggests that the status of women in the family, the low status, is a very important obstacle to being as successful as we all think it is important that we do be.

I think that the other particular problem at the family level is that family planning is planning. If you are below the poverty line, you may be much more concerned about how you are going to eat tomorrow or, at best, whether you are going to have a harvest this year. But to look to what is going to happen to your children when they grow up is a long-term planning matter. In societies with a Chinese background there is a planning tradition across the board. That is why economic growth is so successful in South Korea and in Hong Kong and Singapore and it is why they are so successful in family planning, too. But you have to have some prospect of having a future and a confidence in it to be able to be willing to plan a family with its long-term future as a consideration of importance to you.

So, addressing the poverty issue, the basic human needs issue, employment in particular, is a very important possible way to address this part of the family planning obstacle that is holding us back from achieving what we need to achieve.

I would just like to make one comment, if I may, on the earlier point about food availability, particularly the technology point that was presented by Congressman Porter. I think it is very important to underline that poverty is the biggest cause of malnutrition. There is enough food produced. It is a question of getting it into the right stomach. And poverty is the major factor. New technology, which uses irrigation, uses fertilizer, uses pesticide, is only valuable if it cuts costs. In other words, cost efficiency in the whole food system is a principal criteria. Partly, it is the increase in the number of families who want to consume food, the number of people, that raises costs and thus adds to the difficulty in achieving the results we would like to achieve in curing malnutrition and dealing with the current hunger problem. More children make it more complex because they make it more costly to feed the family.

Thank you very much.

RESPONSES TO QUESTIONS FOR AMBASSADOR EDWIN MARTIN

QUESTIONS SUBMITTED BY HON. MICKEY LELAND

Question. It is my understanding that in many parts of Sub-Sharan Africa women want larger families than they actually are able to have. If this is true, what incentives are there for families to participate in family planning programs? Should we invest funds in voluntary family planning programs that are not in demand?

Answer. It is of course true that in some parts of Africa and the Middle East many women want large numbers of children, often 8 or more. The number is, however, declining rather rapidly. This is due to several influences of varying degrees of importance in different settings. The task of family planning programs and often other aid programs, is to meet current needs and to encourage a more rapid change. Among the factors at play are:

(a) Increased concern about female health and awareness of the threat to it produced by having children too early, too late, or too close together.

(b) Reductions in infant and child mortality that are being produced by better nutrition and better health care, as in the UNICEF GOBI program, which is slowly making parents aware of the possibility of a higher percentage of children not only growing up but being healthy and better contributors to family income and hence making it rational to reduce the number planned for.

(c) Increased education of women and expanded work roles for them enables them to feel more secure in their position in the family and community without having to earn status by having lots of children.

(d) While having other harmful consequences, increasing urbanization with its crowding on the one hand and its example of better-off families with fewer children is persuading poorer immigrants to reduce their size target.

What is essential is that family planning programs give adequate publicity to these changing values and provide a choice of contraceptive means in ways which are convenient to and appropriate for all families.

Question. How can the success of population programs and policies be measured?

Answer. There are many indirect measures of success in family planning programs, of varying relevance in different societies. The most direct and simple, however, is the "Total Fertility Rate (TFR)," the number of children each woman has during her childbearing period. A second is the "Crude Birth Rate" which is the number of births per thousand population. The third is the "National Increase" which is the birth rate minus the death rate which is usually expressed not in numbers per thousand but as a percentage of the total population. The second is influenced by the percentage of women of childbearing age in the total population. The third reflects both that and the death rate. Thus it can be low due to either a low birth rate or a high death rate.

Thus from a professional standpoint the TFR is the best measure of how programs on population and of family planning are affecting the practices of parents with respect to the number of children they have.

Of course the impact of this on the future of a society is greatly influenced by the level of the death rate and therefore the rate of natural increase is of key importance for economic and social planning.

Question. Could you comment on the changes in food security for the malnourished segments of the world's population since the World Food Conference of 1974. Certainly we have had major increases in food production in many areas of the world. The Green Revolution has had tremendous impact on production. What has all of this meant in terms of overall food security?

Answer. With respect to your final question, accurate measurements are not possible. The best estimates, largely from FAO, would indicate that the number of people suffering from clinical malnutrition is at about the same level as it was in 1974, namely between 400 and 500 million. What the Green Revolution has done is to keep it at that level while population in the developing countries was increasing from about 3 billion to about 3.6 billion. There has been a considerable shift, however, with the position of Asia substantially improved, led by the PRC and India, one-half of the population of the developing world, while that of Africa clearly worsened even before the drought of the last couple of years.

The problem basically is poverty, either of families who cannot produce enough and do not have the means to acquire what they cannot produce or of nations who cannot or do not make available the foreign exchange needed to import the food stuffs needed to supplement their domestic production. When they do not do so prices go up and enough food cannot be afforded even if it is available.

Especially in Africa scarcity and high prices are abetted by primitive transportation systems in many countries. This is also a difficulty in some parts of Asia, either isolating areas or adding greatly to costs.

In these comments I address the situation under normal weather conditions, not the special problems caused by droughts or other weather disturbances.

Unfortunately the recommendation given a very high priority by the World Food Conference in 1974 that a world reserve stock of grains be built which could be sold when scarcities raised or threatened to raise world prices above reasonable levels has not been adequately implemented. The supplies to set it up are available as a result of the "Green Revolution" and other productivity improvements but governments have not been able to agree on its financing or on the price guidelines for its management. The ability of such an operation to limit price rises in times of global scarcity would be a major contribution to preventing periodic and otherwise almost uncontrollable increases in malnutrition.

[The prepared statement of Ambassador Martin appears at the conclusion of the hearing, see p. 99.]

Chairman **Leland**. Thank you. Your testimony is very much appreciated.

Senator Taft.

STATEMENT OF ROBERT TAFT, JR., FORMER U.S. SENATOR, POPULATION CRISIS COMMITTEE

Mr. TAFT. Thank you, Mr. Chairman and members of the committee. I want to commend the committee and the witnesses for the detailed technical study of the needs and the problems that we face in this area.

It has been mentioned that the other witnesses and myself are members of the Population Crisis Committee, which I have served on since I left Congress in 1977. I would like to say a couple of words in regard to that organization. First of all, there is no Government money of any kind involved in support of the organization. Second, it does not advocate the use of abortion as a method of family planning. In fact, quite to the contrary, it views population planning as the greatest deterrent in trying to cut down the some 40 million mostly illegal abortions that it is estimated take place every year. Also, it is, of course, strictly nonpartisan and doesn't get into the politics from a partisan point of view in any way.

We do have a growing concern over the future of U.S.-assisted international family planning programs, a concern about what you as the Congress may be able to do about it. Unless the Congress intervenes, it would appear that the infrastructure which has been painstakingly built over a number of years may well be dismantled.

I want to commend particularly Congressman Porter for his comments this morning as a witness for saying that the issue is something that ought to be faced by the Congress, faced openly, directly, with full understanding. For that reason, in the remarks I want to make this morning, which I have made a very full statement of in a prepared statement that I know will be in the record, I would like to just summarize its main points directed more toward the politics of the entire matter as I currently see them, in the hope that perhaps something can indeed be done.

It has not always been easy to sell population planning, as was mentioned earlier by Congressman Scheuer. I served on the House Foreign Affairs Committee for a period of 4 years, from 1967 through 1971. Up to that time, we were having difficulty with the Foreign Aid Program adequately supporting the Population Planning Program that the Congress was outlining. Congress has always been a leader in this field. We were able at that time, because of this feeling, to start putting in earmarking for population planning. We continued to up the amount of that earmarking yearly for a period of 4 years while I was on that committee and then to make it a line item as it currently stands. But the battle has not been an easy one.

As has been mentioned, however, generally. The last six administrations have supported the program. The current developments, unfortunately, I think, put that in some jeopardy.

There is lip service given to the program. At the same time, the adoption of the statement that was adopted for the American delegation to the Mexico City conference put this in real jeopardy and raised, as has been mentioned, a serious question in the international community as to the seriousness of the U.S. continued commitment.

I think the administration's views on family planning programs around the world as expressed in that resolution as it was originally prepared are alarming. It was indicated that the United States—quote—"does not consider abortion an acceptable element of family planning program and will not contribute to those of which it is a part, nor will it any longer contribute directly or indirectly to family planning programs funded by governments or private organizations that advocate abortion as an instrument of population control."

The public reaction to this was such that there was some so-called compromise work done in which governments were taken out of that limitation, so that bilateral programs to governments which include family planning programs that have some abortion-related aspects are exempt so long as they maintain segregated accounts from U.S. funds. But unfortunately, multilateral organizations are not so exempted. Even more importantly, nongovernmental organizations are not exempted.

We have set forth in my remarks on table 1 an indication of the source of various funds for international population planning programs showing that the bilateral programs are really a very small part of the overall process.

Nongovernmental organizations exist today in some 35 countries receiving AID assistance, representing some 1.5 billion people, or over 70 percent of the population of all countries receiving assistance. The availability of abortion is permitted for non-life-threatening conditions in a number of these countries——

Chairman LELAND. Senator, we have a vote in progress. We will come back as soon as we run over to the floor and vote. I apologize for the delay.

[Recess.]

Mr. KOSTMAYER [presiding]. Senator, I have to leave the hearing at 12:15 because I have a luncheon which I am sponsoring for my delegation.

Mr. TAFT. I think we can terminate in that period.

Mr. KOSTMAYER. And I apologize.

Mr. TAFT. Not at all.

Mr. KOSTMAYER. Senator, please proceed. Welcome to this committee.

Mr. TAFT. Thank you very much.

In terms of the impact on the major channels of population assistance, a planned $17 million grant of cash and commodities to the IPPF has already been withdrawn. The major U.S.-based NGO's nongovernmental organizations, also are indicating they may be unable to reach an accommodation with AID on any new contractual language. Out in the field, foreign organizations are indicating that they cannot agree with some or all of the provisions, including organizations with no current involvement in abortion. Some $140 million of U.S.-financed programs could be at stake.

This development, insofar as NGO's concerned, is also alarming because it indicates there will be a lower cost effectiveness. Many of the most cost-effective programs are the NGO programs. With only one-third of the 500 million couples in the developing countries, excluding China, having access to family planning services, lowering cost effectiveness is going to reduce access to family planning services and increase the number of couples resorting to abortion.

Besides the disastrous practical impact I mentioned, serious questions have been raised internationally by our activities. We are for the first time being accused of using our population planning and foreign assistance programs to manipulate the policies of other countries and both the public programs and private programs as well.

Bedrock principles never to impose conditions on disinterested developing governments through other forms of development assistance, such as Public Law 480, on acceptance of a particular population policy are being questioned for the first time.

It is also, of course, discriminatory insofar as considering foreign organizations and U.S. organizations due to the fact that constitutional principles, I think, have been observed thus far by the administration and others as to U.S. organizations by not cutting off funds in which legal activities relating to abortion are being undertaken with nongovernment provided funds.

Also, the principle that seems to be adopted by the administration raises a question whether it isn't contradictory to the intention of the administration to try to build up the private sector. The impact is sure to turn off private organizations and, I think, tend to put any aid that we put into family planning into public organizations rather than private organizations.

Finally, I just want to point out that, of course, insofar as money is concerned, the amount of money involved in the population planning programs as to overall AID programs is not large. Table 2, following page 11 of my testimony, sets out the comparisons and shows that the efforts to improve health and nutrition for the current fiscal year are something in the neighborhood of $2 billion, as opposed to the proposed population and family planning funds of only $287 million. So, we are not talking about a great deal of money here, but unfortunately the impact, because of the interrelationship that has been recognized between the population planning programs and other foreign aid programs, has been a very important one. I think many of us have recognized over the years that many of the programs in foreign aid have a chance of succeeding only if there is action at the same time with population planning.

We also realize that economic development is important insofar as population planning progress is concerned, but the two have got to work together, hand in glove. You can't simply cut off arbitrarily almost all the population planning funds.

Finally, I would like to applaud the efforts of the Select Committee on Hunger insofar as the African problem is concerned. I think, realistically, the food crisis there will not be resolved without a resolution of the population crisis. Unfortunately, most African governments were reluctant until recently to establish and maintain effective family planning programs. But foreign aid donors might have prevented some of the tragedy in Africa. Too little of the investment in Africa has gone for family planning. The 400 million Africans living in sub-Saharan countries require about $600 to $800 million per year to ensure access to good, voluntary family planning services. The donor community has been providing about 10 percent of that needed amount.

Donors provided about $1 billion worth of food aid for Africa in 1984. At least $500 million more is needed for the present emergency. It is likely that adequate investment in family planning would have been more cost-effective than this aid which is so necessary.

Each year donor nations provide developing countries with foreign aid totaling about $11 a person, of which only 14 cents goes for population planning programs. Without substantial increases in these funds for family planning programs, the developing world, unfortunately, may in many instances be doomed to repeat, perhaps several times, the tragedy of Africa.

Thus, I think it can be easily shown that world efforts are inadequate. The U.S. developments are going to make that even more inadequate unless there is some turnaround on this by the Congress.

At this time we ought also to recognize that the developing countries themselves, while they can't totally meet their needs, are in many instances increasing the self-help that they are providing. There is, nevertheless, in spite of that, a great need.

The UNFPA has a total of at least $250 million of programs that have been approved this year which will not be funded.

In summary, the U.S. role seems to be vital. The increased awareness and receptivity to family planning program worldwide are largely the result of U.S. leadership in the past 20 years. We are still the most important technical and financial resource around the globe, and this kind of leadership remains clearly in our national interest.

The new U.S. Mexico City population policy calls into question the leadeship role the United States has played in expanding the availability of voluntary family planning programs worldwide over the last two decades. It is overwhelmingly clear that the United States must continue its leadership role not only in financial aid but in urging developing world governments to give higher priority to family planning.

The Congress thus must directly challenge the implementation of the administration's new Mexico City population planning policy by addressing the issue this year. Failure to do so can result in dismantling of the network of multilateral and nongovernmental organizations, both at home and abroad, that are vital to having real progress made in this field.

Thank you very much.

RESPONSES TO QUESTIONS FOR ROBERT TAFT, JR.

QUESTIONS SUBMITTED BY HON. MICKEY LELAND

Question. The AID Office of Population receives numerous requests for population program grants from nonprofit and commercial organizations alike. What kind of population programs would you consider to be most effective in reaching those in absolute poverty, especially those in regions which experience population pressures?

Answer. It is clear from our experience to date that private sector initiatives are by far the most cost-effective channel for reaching couples with family planning services. Such private sector initiatives include those of voluntary organizations involved in various types of community-based distribution systems, as well as efforts by the organized sector—union and industry-sponsored education and service programs—and schemes for involving private health practitioners and health insurers. Certainly a supportive political climate is important to the success of these programs. But we do not believe that direct Government services programs are necessarily the most effective or efficient mode for reaching the population. Bureaucratic lethargy and inefficiency represent major obstacles in most countries to the rapid spread of family planning.

Question. Most of our testimony has offered a gloomy assessment of demographic realities. You have raised serious questions about policy directions of the U.S. Government in the population area. What are the encouraging signs? Where is the optimism? What are the elements for success in this area?

Answer. There are a number of encouraging signs. The most important involves the change in attitudes. Twenty years ago, the United States was virtually alone in its advocacy of population programs. Today many developing countries consider population trends to be one of the most important development problems they face, if not the most critical, and are putting increasing amounts of their own resources into family planning. Other donor countries are also now heavily involved. The International Population Conference in Mexico City demonstrated a strong worldwide consensus on family planning. There has also been substantial change in individual attitudes about family planning and family size. In fact the demand for services now far exceeds the supply in a larger number of countries. Certainly the population problem is still urgent, but there is no longer any reason to believe it is hopeless as long as we can assemble the resources needed. In this respect, U.S. policy will play a key role, since we remain 40 percent of all donor assistance.

[The prepared statement of Mr. Taft appears at the conclusion of the hearing, see p. 103.]

Chairman LELAND. Thank you very much, Senator.

Let me now yield to my colleague, Peter Kostmayer, who has to leave. I would like to hear his questions.

Mr. KOSTMAYER. Thank you, Mr. Chairman, very much.

I want to thank Mr. Claxton, you, Ambassador Martin, and Senator Taft for your testimony. I think, especially, Mr. Ambassador, and Senator, that both of you could be most helpful in this area. As you know, we have already lost this issue in the Senate. The Senate Committee on Foreign Affairs has adopted Senator Helms' amendment on IPPF and UNFPA, and the full Senate has adopted the bill.

The bill has not come up in the House. We won the issue in the House committee, which has adopted the bill. We got $320 million in for fiscal year 1986 and fiscal year 1987. We have got 16 percent going to UNFPA. We put back the $17 million for IPPF which was suspended last December.

But when the bill comes to the floor—and Lord knows when it will, we think maybe in July—our colleague and our friend, Congressman Smith of New Jersey and our friend, Congressman Kemp of New York, will most likely offer amendments to do what the Senate has done and to knock out a full third of the UNFPA budget and a full third of the IPPF budget.

I would think, Ambassador, with the Members of Congress, House and Senate, that you know, and certainly, Senator, as I say, the Senate is lost but, from your service here on this side, if you could be helpful in this area and get to that telephone and call as many House members as you know. It is very, very close. We have got about 66 Members in the House who are undecided. Everybody else has taken a position. We are ahead by one vote, not counting those 66 House Members. We would be happy to provide you with a list of those 66 House Members. Any contacts—and I know you both have very extensive contacts in the House—then, of course, we will go to the conference committee. It is essential that we win the fight on the House side so that this is a conferenceable item. Because, if we don't, there won't be anything in the bill and we're done. We will end up with a good deal less than we want. But at least if we can go to the conference with something in the House bill, we will come out of the conference with a little bit of money. Otherwise, we are going to have very, very serious problems.

That, I think, would be the most helpful thing that you two gentlemen could do.

Mr. MARTIN. Mr. Chairman, I wish to thank you very much for this statement. It checks entirely with the way we see the situation at the Population Crisis Committee. We do have a list similar, I am sure, to yours, not only looking at it with the people we know but the people we know who may know them.

Mr. KOSTMAYER. That is very important.

Mr. MARTIN. We have got to go two or three levels back, if necessary, to persuade people of the importance of this issue. It is not just a routine matter.

Mr. KOSTMAYER. Thank you.

Finally, I would like to, as all of you have done, thank and commend the chairman of this committee, the gentleman from Texas, for holding these hearings at my request.

I also thank him at this time for the attention which he has focused on the situation in Ethiopia. I don't think there is anybody in the Congress more responsible than the gentleman from Texas, Mr. Leland, for focusing public attention in the Congress and in the country on the situation in Ethiopia. We went there together last November. He, I think, is single-handedly responsible for saving a great many lives, especially the lives of the children of Africa in that country.

So, I join with you in commending him. Thank you for attending our hearings today.

Thank you, Mr. Chairman.

Chairman LELAND. I thank the gentleman. I know the gentleman has to leave, but I must say I feel certain we have been enlightened today. In the past, I am afraid, this committee had not placed adequate emphasis on the issue of population as it relates to hunger. Today, with your testimony and the interest that has been generated by our witnesses, the committee can begin to explore the intricacies of population issues as they relate to hunger.

I do have some questions, if you gentlemen can endure just a little longer.

Mr. Claxton, given the gap between food production per capita and population growth, which has been illustrated this morning, is it more beneficial to address population growth or food production? In which area can we realize the most progress?

Mr. CLAXTON. Mr. Chairman, I don't think we really have a choice. We must do both.

I suppose, as has been said a moment ago by Senator Taft, at least for a while, addressing the population matter in most countries of Africa would be most cost effective—but that would not be sufficient, as I said in my statement. There are other things that have to be done, and I am sure you are aware of them. We can discuss them if you wish. But right now they at least are producing substantial amounts of food, even though, as in some countries, it is actually less than it was a few years ago. But as was pointed out very early this morning, in few if any countries in Africa more than 5 percent of the women are engaged in any family planning effort.

There has been a great reluctance on the part of African countries for a number of reasons—and Ambassador Martin has dealt with several of those which are particularly applicable to Africa—a reluctance to engage in national family planning policies and programs. I believe that is changing. I believe it is changing very significantly. My present work has involved me going to Africa three times in the last few months to different countries. My colleagues have gone to many others. I think it is perfectly clear that the leadership in many of the African countries are now realizing that there has to be something done about reducing the rate of population growth if they are to achieve any of the objectives which they have set out in their own 4-year plans, 5-year plans, or whatever.

There are two or three reasons why this has happened recently. One, I think, was the enormous increase in the price of oil by the OPEC nations, which has been a strangulation for many of the countries. There was one country I was going to to make one of these computer presentations and was told, don't come, there isn't any electricity. You can't depend on electricity at any particular time of the day. There's a ship in the harbor with oil which can be delivered, but the country literally doesn't have the money or the credit to buy the oil.

I know this of one country on one side of Africa and one on the other side of Africa, the same situation, and many in the middle.

The next matter, of course, was the general reduction in the world economy a few years back. This has been a great blow to many African countries, already on the margin of subsistence for their people. The reduction in their ability to sell their commodities abroad, what little they could produce, and the reduction in prices for those commodities has put a very severe burden on many countries. So, for the first time really, they have had to look at the problem of their numbers and their population and their population growth as an economic problem, which they had not really been thinking about before, although, goodness knows, there was plenty of information laid before them.

This particular form of information which we have just seen here, the RAPID project, has had a very significant effect. Because of its novelty, because it can convey a great deal of information in a very simple and understandable form to leaders who did not get to be the heads of state by being a demographer but came up through other ranks, they can understand it. Not only that, by being both colorful and simple, they can be moved by it. This is happening in many countries.

Analyses of these kinds have been made for about 45 countries in the world and 15 or 17 in Africa, many presented to the senior leaders in those countries, sub-Saharan I am talking about.

So, there are things which are occurring in Africa which are motivating leaders to begin to realize that they must do something. That doesn't mean that it is going to be easy for them to accomplish even if they wish. It is going to take a good deal of assistance on the part of foreign countries, particularly the United States, with our own ability to help them, and on the part of the U.N. Fund for Population Activities. The U.N. fund has been and is the primary donor system in Africa to governments, just as the IPPF has been and is the primary source of assistance to private family planning associations in many African countries which are doing most of the work that has been accepted and is being done in most of the African countries.

As it has been said by members of your committee and by other witnesses, the issues before the Congress now are very serious, not only for the people of Africa but for the people of the United States. As I said in my opening statement, the efforts which you have led in such an important matter and your committee, of saving the lives of many thousands of people, of helpless people, in Ethiopia, has been a great boon to them; but it has also been a boon to the United States because we have very deep interests in these countries, some of which, I think, are not widely realized.

One of the works which your committee can do is, of course, that of educating our own people, our own people in Congress as well as elsewhere in the country, to the issues, of which this matter of population growth is one very important one, an essential one which underlies most of what else can be done in those countries. Thank you.

Chairman LELAND. Mr. Ambassador.

Mr. MARTIN. Mr. Chairman, I would just like to add one point particularly related to your question of cost effectiveness. One of the significant elements in the African problem of population has been that, until fairly recently, there was a very high rate of infant mortality. This not only encouraged parents to have lots of children, but it also reduced the burden of the children on the society, whether hungerwise or otherwise. Now that that is beginning to be reduced substantially and particularly if the UNICEF program called GOBI proves to be as successful as it may well be, it has all the appearances of it, it is going to make a still further major reduction in infant mortality. Unless that is accompanied by equally vigorous efforts in the family planning field, you are going to have an upsurge like the baby boom that we had after World War II, with an increased number of women becoming of childbearing age 20 years from now and having disastrous consequences, unless we can bring that under control.

UNICEF is having to set up somewhat of a network of facilities in order to undertake GOBI, a very desirable program. But if they can reach the countryside with that program, we ought to also be able to work out some means of working together to reach the same people, the same mothers who are giving the injections and who are learning about these problems with family planning information and services.

So far, there has not yet been an effective collaboration worked out. But this also bears directly on the point that Senator Taft was making about our expenditures on health not being matched by expenditures on population control to keep the situation in balance. And Africa is the critical case right now in that respect, in my judgment.

Chairman LELAND. Let me ask a very difficult question. We were in Ethiopia. We were talking to Government officials. Prior to going to Ethiopia, we spent some time in Rome with Ambassador Fenwick, who had her country team there to advise us of problems of forced migration of people who lived in the north of Ethiopia to the south. That raised some very serious questions about the intentions of the government as well as causing some considerable problems between the United States and the Government of Ethiopia. The question of redistribution of population is one that raises many questions for people, particularly politicians.

Can you comment on the credibility of the notion that there are some areas that can produce food but are either uninhabited or inhabited by just a few people and whether or not we can move people where there are farmlands available to develop food production?

Mr. **Martin**. Thank you very much. Mr. Claxton said I could have this one.

I think Lester Brown probably would know better than any of the three witnesses here. I would call attention to the fact that migration between countries can be a complicated question. Most of the African countries are relatively newly independent, yet they have national feelings. We have had, of course, quite recently the experience of Nigeria. Because of its oil wealth, there was enormous migration from neighboring countries, Ghana in particular, and they are sending them back home now that the oil prices have fallen, and they are feeling the pressure of food and other problems.

But I would also say that is, on the whole, Africa is not a rich area agriculturally. You have northern parts which are dry, the sub-Sahel area. It is generally a laterite soil, which is not good soil for agriculture. The rainfall is very irregular normally with the monsoon-type, large and then small. So, it isn't just by accident that Africa has been a poor country generally and agriculturally. It doesn't have very many assets.

I know in Kenya, which is one of the better countries agriculturally than most—partly that enables it to have the highest population growth rate in the world—when I was there in the early 1970's the East African Agricultural Research Center had stopped working on wheat or corn because all the land that had enough moisture to grow them had been already used. So they were working on sorghum and millet, which can get along with a lot less water, up in the northern part of Kenya near the arid areas of the sub-Sahel.

I would suspect that further expansion of agriculture in Africa will have to be more of an intensive rather than extensive kind. Intensive agriculture takes a very substantial investment both in terms of capital, in terms of training, and in terms of transportation facilities to move the inputs in and the grain out. And Africa is not well supplied with any of them.

I might add that also, as a result of the decolonization, the dividing up, it is divided up into a lot of national units, which doesn't make very much economic sense. Organizing your production and transportation and so forth sensibly becomes very difficult when you have to stick to unreasonable national boundaries.

Chairman **Leland**. Very good.

Senator Taft, the foreign aid budget request for fiscal year 1986 would reduce U.S. assistance for family planning programs in developing countries by 14 percent, the largest portion of reduction being in the service delivery budget. In your opinion, what would be the real effect of such reductions?

Mr. **Taft**. Well, I think the service delivery budget is probably the cutting edge of the program. So, it seems to me that it would be a very direct effect, almost 100 percent, on service delivery.

Chairman **Leland**. Keeping in mind the current severe budgetary constraints, how would you prioritize the allocation of development aid funds among agriculture, population, health, education, and other programs?

Mr. **Taft**. I suppose it would have to vary with the country involved, Mr. Chairman. But we have never gotten population planning up to what I think the percentage ought to be of the program. That isn't to say it can be the only program at all, as I indicated. I think there is a direct interrelationship that ought to be maintained between our other aid programs and the population planning program in order for each of them to maintain anything like their potential effectiveness.

Chairman **Leland**. With the cutbacks that we are realizing, are we putting into jeopardy our entire investment in international development by retreating from the population area as we seem to be doing?

Mr. **Taft**. I think you are right, to a considerable degree. We have made a big investment in it over the years. I think it has shown very definite progress in getting acceptance in many more countries by many more governments. I think we are just beginning to see it really have some effect in building up the effectiveness of other foreign aid programs. If we cut it off at this point it certainly is going to have some deleterious effect. I wouldn't say that it would necessarily wipe out the effectiveness of all foreign aid programs of an economic nature, but it certainly is going to have an adverse impact.

Chairman **Leland**. Those are my fears as well.

Mr. **Claxton**. Could I just comment on that?

Chairman **Leland**. Certainly.

Mr. **Claxton**. You have touched on precisely the reason the United States began to go into the program of assistance for population matters in 1966, which was when we started, with a push from the Congress to get the executive branch going. At that time, I happened to look into the matter, and I was really shocked to discover that the Alliance for Progress, to which previous administrations and the Congress had given a lot of attention on a bipartisan basis, under the Alliance for Progress the Latin American nations were developing a somewhat increased GDP, which turned out to be about 3.5 percent per year. But the population growth rate—and this was a shocker to me—was about 3 percent per year, on the average, throughout Latin America.

This meant then that of the money we provided, $1 or $2 billion a year, a lot of money and the far greater investments of the people of Latin America in development, about six out of seven units of increase was being absorbed by population growth. So, instead of achieving what we wanted to achieve, to help people develop a higher standard of living, a better quality of life, we were simply helping them provide about the same level of living, the same low standard of living, for a lot more people.

That situation has persisted because the rate of population growth has continued far in excess of the ability of the capacity for reducing it.

So, the problem which you state is a very real one. We are still endeavoring to preserve the gains, to help them preserve the gains which they are making through our own aid to them and that of other nations to them and their own far greater efforts in their own behalf, in self-help, prevent them from being absorbed by rapid population growth.

There are parts of the world where they, with our help, are really making progress. Africa is not such a part of the world yet. As I said, I think they are good signs that with real assistance from us and with the kind of internal motivations which I mentioned a while ago, there is going to be a significant change.

Chairman LELAND. Very good.

I have other questions, but I won't hold you any longer. We will submit them for the record and written response.

Let me thank all of you for being with us today. You have been most helpful. I will tell you that you will make an impression on the Congress through your testimony. We are going to work to convey your sentiments to the Congress.

I believe and want to say again that our witnesses have made us all more aware of the linkages between hunger and population issues and I thank you all very much.

This hearing is concluded. The meeting is adjourned.

[Whereupon, at 12:40 p.m., the committee was adjourned, subject to the call of the Chair.]

[Material submitted for inclusion in the record follows:]

PREPARED STATEMENT OF HON. SANDER M. LEVIN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MICHIGAN

I would like to commend the Select Committee on Hunger, and Chairman Leland, for calling us together today to address this critical issue, at this critical time. Over the last several months, we in the Congress have watched the growing horror of famine in Africa. At the same time, we can trace a developing instability in U.S. commitment to assist programs in developing countries to reduce rates of population growth. Thus, this is a useful time to reassess the U.S. role in these efforts, to analyze and understand clearly the bases for U.S. interest and involvement.

During the first half of the twentieth century, population grew faster than during any fifty year period during the world's history. However, it remained at less than one percent per annum and the rate of growth was similar in industrialized and non-industrialized countries. (See table).

Between 1950 and 1970, the annual rate of population growth in the world doubled. Ninety percent of this increase occurred in developing countries. As can be seen from the chart attached, in those twenty years the percentage of the world's population in industrialized countries dropped by ten percent with a like increase in developing countries.

The response to this historic burst in population growth rates in LDC's in the 50's and 60's varied from nation to nation, industrialized or non-industrialized. There were, however, some factors common to industrialized countries and especially pronounced in the United States which worked to bring about an increase in concern and activity about accelerating population growth rates in developing countries.

One was that the dramatic acceleration of population growth rates in developing countries coincided with a dramatic broadening of freedom of access to contraception in industrialized nations. In the United States, public opinion polls in the sixties showed that family planning was no longer a controversial issue and that families regardless of income wanted and would use birth control. The most revolutionary breakthrough in contraception technology, the pill, appeared during this period.

Centers of expertise in demography appeared in industrialized nations, especially the United States, with the help of the Rockefeller and Ford foundations.

	Population (millions)			Percent of population	
	World	MDC's	LDC's	MDC's	LDC's
1750	791	201	590	25.4	74.6
1800	978	248	730	25.4	74.6
1850	1,262	347	915	27.5	72.5
1900	1,650	573	1,077	34.7	65.3
1950	2,486	858	1,628	34.5	65.5
1970	3,632	1,090	2,542	24.9	75.1

Source: "World Population and Development," ed. Philip Hauser, page 13.

This does not mean that there was no resistance to active American participation. For example, in the 1960s, the U.S. abstained on a vote in the United Nations on a proposal to provide technical assistance in population. The explanation given was that it was not clear during the debate whether "technical assistance would involve the actual supply of contraceptive devices, which the United States would not have supported and did not support." Surmounting this resistance, however, supporters of a new U.S. government policy toward population growth in the developing world brought about dramatic changes in U.S. policies and programs between 1965 and 1972, such as: a major growth in funding; separation of these funds from the remainder of the U.S. foreign assistance budget through the earmarking to a separate central office devoted to population; and a number of field staff overseas who would report directly to the central population office in Washington as well as to the in-country AID mission Director.

While factors in industrialized nations increased their receptivity toward proposals addressing issues of population growth rates in developing countries, there were major factors in many of these developing countries in the 50's and 60's which worked against their own involvement with population growth issues.

The post-World War II period coincided with the first years of independence for most developing countries. The pressures of day to day problems overshadowed concern about population growth. There were immediate crises of civil strife in some and the long-standing crush of hunger and/or massive malnutrition in most—problems far more visible each day than "long term" population growth. Faced with immense needs in food production, there was apprehension that, as a practical matter, population programs could divert funds from these other needs.

This was reinforced by various ideo-logical perspectives. As one observer put it, "poor within rich countries and poor countries are more inclined to explain their poverty as a consequence of the policies and the practices of the rich than of their own inability to limit their own procreation". Even more stringent arguments against inclusion of population among national concerns came from Marxist ideologues who contended that population growth was being raised by the west not because it was detrimental to economic growth but as a method by capitalist countries of diverting attention from basic causes of economic problems.

With nationalism at a high level after its role in the achievement of freedom in most developing nations, pride in numbers often better fitted national mood than concern about them.

Cultural and social factors also kept population issues outside the main circle of most LDC national concerns. Upon independence, LDCs were invariably at least ninety percent rural and the large family was a long-standing tradition and practice in this setting. Whether the cause or the effect, or both, in numerous LDC societies this pattern combined with a limited, often highly confined, role of the wife. Matters relating to sexual relationships and conduct were deemed private, not public ones. And from the meager number of available studies, it would appear that within the home it was not the practice in many LDCs for there to be substantial dialogue on matters related to birth control between husband and wife.

Religious doctrine also often worked to keep population issues separated from the mainstream of governmental and social concern and action. In addition, high instances of infant and child mortality encouraged frequent pregnancies. For instance, as of 1984 a Sahelian woman would have to bear six children to term to have a reasonable assurance that one would live to the age of thirty.

Thus, various factors were leading many policy makers in industrialized countries to be receptive to assisting populations programs in LDCs and to believe their implementation to be a relatively simple proposition—quite unrelated to the more complex issues of overall development. At the same time, factors in LDCs were leading policy-makers there to be hesitant and to emphasize the complexity of implementation. These population program perspectives clashed at the 1974 Bucharest World Conference on Population—a conflict later described by much of the media as "development versus the pill".

After Bucharest, there occurred major changes in population policies and programs. Some industrialized nations who criticized the emphasis on development went home and began to reevaluate and give international population assistance programs a clearer development focus. This was true in the U.S.: the following year, President Ford approved a basic statement which included an emphasis on the need to view population programs in a broad development context. In various developing nations, which had criticized the industrialized nations' emphasis on contraceptives, more interest developed in family planning as an integral part of over-all socio-economic development. In brief, developed nations came to understand better the complexities of the population programs, and developing nations the urgency.

A concensus along these lines evolved on virtually all sides during the 10 years after Bucharest—sharpened on the hard edges of determined reassessment, vigorous debate and a variety of experiments with new and broadened programs.

During the last four years however, this concensus has been challenged—in the West—along several lines.

Some have questioned whether population growth rates are relevant to general socio-economic development. In other words, they have taken up the banner raised by some LDCs at Bucharest but flung down since then by most. The sole answer, according to these latter-day critics in the U.S., are correct economic policies—not Marxist economics as embraced by some at Bucharest, but free market; programs to slow population growth rates are, they say, irrelevant.

Increasingly, however, leaders in developing countries where these issues are being experienced have come to the conclusion that there is an important connection between high population growth rates and the challenge of general socio-economic development. This has been true of countries in sub-Saharan Africa. In recent years, population growth has been outstripping the rate of growth of agricultural production.

This was true even before the most recent famine began to further ravage the countries of sub-Saharan Africa. The African famine has reinforced the concensus expressed at the International Population Conference in Mexico City, that there is no single answer to the needs of developing countries.

Clearly, there is a need for improvement in general economic policies. There must be more attention to the agricultural sector. But also, it must be recognized that high population growth rates can be a major impediment to overall development. There must be a well-rounded, vigorous approach from all these vantage points.

The recent cyclone in Bangladesh highlighted the active interplay of factors in a developing country. The economic and structural pressure caused by the high rate of population growth in Bangladesh has forced the country to live and work in areas of heightened meteorological peril. There is no secret about this danger, but for hundreds of thousands—indeed for millions—there is no alternative.

The President of Bangladesh stated it well. No one pretends that vigorous population programs in Bangladesh would have prevented the catastrophe or are the complete answer. But they are a part of the answer, he stated, and they need support from external sources, just as these sources are needed for improved weather warning systems.

In the last several years the long-standing commitment of the U.S. to assist developing countries with their population programs has become entangled with the issue of abortion. This is true even though the Agency for International Development has assiduously enforced the prohibition enacted by the Congress against U.S. monies for support of abortion-related activities in developing countries. There is increasing concern that while the U.S. is not directly providing support, there may be indirect involvement. This has been an especially pressing matter where abortion-related activities have been reported to include elements of coercion.

A resolution of the many questions relating to this issue will not come easily. Currently, the Congress and the Administration is having difficulty achieving a concensus. We have dealt with the issues piecemeal, including: the defunding of the International Planned Parenthood Federation, and the controversy over U.S. participation in UNFPA's program in China. As we address these concerns and others, let us keep two objectives firmly in mind.

First, we must be certain that the U.S. is not in any way an operative partner in activities which we believe violate certain basic principles of human rights in population programs. In population programs as much as in any of our involvements overseas—commercial, political, military, cultural—we must be as committed to our own principles of human rights as we are at home.

Second, we must work to strengthen, not weaken, U.S. support for voluntary family planning activities. Our commitment to developing countries is a real and immediate responsibility, in our own interests as well as in theirs. That commitment must be fulfilled within a framework of human rights; it should not become simply another battleground for the debate within the U.S. on the issue of abortion.

What rule should Congress play, then? Holding the pursestrings is not enough. It is vital that the Congress exercise oversight over the evolution of population policy overall. To an extent this has been achieved through Members' participation in conferences like the recent one in Mexico City, which Congressmen Porter, Scheuer, and I attended.

Congressional oversight is significantly advanced by this Select Committee on Hunger, addressing today issues of population growth rates and emphasizing the relationships between population and hunger issues. One of the gravest threats to developing nations is the lure of the simple or single answer—the either/or proposition. These needs are urgent and critical. We must acknowledge the requirement for concurrent action on a variety of fronts.

PREPARED STATEMENT OF HON. JAMES H. SCHEUER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

MR. CHAIRMAN, I COMMEND YOU AND THE MEMBERS OF THE SELECT COMMITTEE ON HUNGER FOR HAVING THE FORESIGHT AND WISDOM TO HOLD THIS IMPORTANT AND TIMELY HEARING ON THE LINK BETWEEN POPULATION AND HUNGER.

THE PRIME EXAMPLE OF THIS CAUSAL LINK IS, OF COURSE, SUB-SAHARAN AFRICA.

IN THAT REGION, THE POPULATION GROWTH RATE IS THE HIGHEST IN THE WORLD -- 3 PERCENT AND RISING -- WHILE THE RATE OF FOOD PRODUCTION IS GROWING BY A LITTLE MORE THAN 1 PERCENT PER YEAR.

SIMPLE ARITHMETIC TELLS US THAT THERE IS A 2 PERCENT PER CAPITA DECREASE IN FOOD PRODUCTION IN SUB-SAHARAN AFRICA AND THE GAP BETWEEN GROWTH OF PEOPLE AND GROWTH OF FOOD IS INCREASING.

(MORE)

JUST TWO DECADES AGO, IN THE EARLY 1960S,
MOST AFRICAN COUNTRIES WERE
SELF-SUFFICIENT IN FOOD PRODUCTION AND, INDEED, WERE
FOOD EXPORTERS.

BUT THESE INCREDIBLE RATES OF POPULATION
GROWTH OVERRAN FOOD PRODUCTION IN
A FEW SHORT YEARS SO THAT BY THE
END OF THE 1970S, PER CAPITA
FOOD PRODUCTION HAD FALLEN BY
10 PERCENT OVER LITTLE MORE THAN A DOZEN YEARS.

IT IS ESTIMATED THAT BY THE END OF THE
1980S, PER CAPITA FOOD PRODUCTION
IN THE SUB-SAHARAN REGION OF AFRICA
WILL HAVE DROPPED BY 20 PERCENT
AND THAT TREND WILL NOT CHANGE UNLESS
WE DEVELOP A COMPREHENSIVE, LONG-TERM PROGRAM TO REDUCE POPULATION
GROWTH AND INCREASE AGRICULTURAL
PRODUCTIVITY WITH APPROPRIATE
TECHNOLOGY.

ON A GLOBAL SCALE, PROJECTED STATISTICS
ON POPULATION ARE OVERWHELMING.

IF CURRENT TRENDS CONTINUE, THE WORLD
POPULATION WILL INCREASE BY ALMOST
ONE THIRD TO 6 BILLION PEOPLE BY THE YEAR 2000.

(MORE

NINETY PERCENT OF THE POPULATION INCREASE WILL OCCUR IN DEVELOPING NATIONS -- NATIONS WHICH ARE THE LEAST ABLE TO COPE WITH THE PRESSURES ASSOCIATED WITH OVER-POPULATION.

MR. CHAIRMAN, TO PUT IT BLUNTLY, OUR BATTLE AGAINST HUNGER AND THE MISERY AND SUFFERING IT CAUSES -- OUR BATTLE TO FEED THE PEOPLE OF THE WORLD -- HAS BECOME A RACE AGAINST TIME.

AT LEAST 800 MILLION PERSONS IN DEVELOPING COUNTRIES REGULARLY DO NOT HAVE THE ENERGY FOR ROUTINE PHYSICAL ACTIVITIES BECAUSE OF THEIR LIMITED DIETS.

ANOTHER 300 MILLION CHILDREN ARE RETARDED IN PHYSICAL GROWTH AND MENTAL DEVELOPMENT AND FACE INCREASED RISK OF DISEASE AND DEATH BECAUSE OF MALNUTRITION.

(MORE)

IN SOME OF THE POORER COUNTRIES OF AFRICA, LATIN AMERICA AND ASIA, MORE THAN 70 PERCENT OF THE CHILDREN ARE GROWING UP UNDER CONDITIONS THAT IMPAIR THEIR GENETIC POTENTIAL FOR GROWTH AND DEVELOPMENT, AND COMPROMISE THEIR HEALTH.

THESE STATISTICS ARE STARTLING ON THEIR OWN, BUT WE CAN'T FORGET THAT THE END RESULT IS MEASURED DAILY IN LOSS OF HUMAN LIFE.

AS WE HAVE SEEN IN SUB-SAHARAN AFRICA AND OTHER PAST CASES OF FAMINE, MASSIVE FOOD AID CAN EAST FOOD SHORTAGES TEMPORARILY.

BUT SUCH SHORT-TERM, QUICK FIX APPROACHES DO NOTHING TO SOLVE THE OVERRIDING PROBLEM.

TO REDUCE HUNGER ACROSS THE GLOBE, WE MUST DEVELOP A LONG-RANGE PLAN THAT ATTACKS THE CAUSE OF THE ILLNESS, RATHER THAN JUST TREAT THE SYMPTOMS.

THE NECESSARY TOOLS TO REDUCE HUNGER ARE AT OUR DISPOSAL.

WE MUST HELP DEVELOPING NATIONS WORK THEIR WAY OUT OF THE PROBLEMS OF POPULATION GROWTH.

IN THE PAST 5 YEARS, THE TWO LARGEST COUNTRIES OF LATIN AMERICA -- MEXICO AND BRAZIL -- REVERSED THEIR PRONATALIST POLICIES AND MADE GREAT STRIDES IN NATIONAL FAMILY PLANNING PROGRAMS TO ADDRESS THE KIND OF PROBLEMS THAT ARE DECIMATING THE PEOPLE OF SUB-SAHARAN AFRICA.

AN IMPORTANT COMPONENT IN REDUCING THE RATE OF POPULATION GROWTH IS A PROGRAM AIMED AT MAKING SIGNIFICANT IMPROVEMENTS IN THE STATUS AND ROLE OF WOMEN IN DEVELOPING COUNTRIES.

WHEN WOMEN HAVE ACCESS TO EDUCATION, TO JOBS, TO CREDIT, THEY QUICKLY CHANGE THEIR GOALS CONCERNING FAMILY SIZE WHEN THEY HAVE OTHER LIFE OPTIONS.

(MORE)

WHEN WOMEN IN DEVELOPING COUNTRIES ARE GIVEN THE OPPORTUNITY TO HAVE MATERNAL AND CHILD HEALTH SERVICES WITH A STRONG FAMILY PLANNING COMPONENT, AND ARE SHOWN THAT APPROPRIATE TECHNOLOGY CAN TAKE THE PLACE OF ADDITIONAL CHILDREN IN HANDLING FAMILY CHORES, THEY BEAR FEWER CHILDREN.

THEY LEARN THAT IMPROVED HEALTH CARE AND NUTRITION WILL REDUCE THE INFANT MORTALITY RATE AND ASSURE THAT THEIR CHILDREN WILL SURVIVE TO MATURITY TO TAKE CARE OF THEM IN THEIR OLD AGE.

AT THE SAME TIME, WE MUST WORK WITH DEVELOPING NATIONS TO INCREASE THEIR AGRICULTURAL PRODUCTIVITY.

EFFORTS TO INCREASE FOOD PRODUCTION IN ASIA AND LATIN AMERICAN HAVE HELPED AND ARE OFTEN CITED AS MODELS FOR WHAT CAN BE DONE IN AFRICA.

HOWEVER, MUCH OF THE INCREASE IN FOOD PRODUCTION IN THESE REGIONS WAS ACCOMPLISHED BY IRRIGATION AND LARGE-SCALE GOVERNMENTAL COMMITMENT TO AGRICULTURAL REFORM.

LARGE SCALE, CAPITAL INTENSIVE AGRICULTURAL PROJECTS ARE NOT PRACTICAL IN AFRICA BECAUSE OF THE REGION'S ALMOST TOTAL LACK OF GOVERNMENT INFRASTRUCTURE AND CAPITAL, ITS POLITICAL INSTABILITY AND THE FACT THAT MOST AGRICULTURAL ACTIVITY IS IN THE HANDS OF SMALL SCALE, RURAL FARMERS.

SIMILARLY, IRRIGATION IS NOT POSSIBLE IN MANY AREAS OF AFRICA BECAUSE OF THE REGION'S LOW AND ERRATIC RAINFALL.

WHAT AFRICAN FARMERS NEED TO INCREASE PRODUCTIVITY IS A PROGRAM PROVIDING EDUCATION AND ACCESS TO LOW RESOURCE, LABOR INTENSIVE TECHNOLOGY -- APPROPRIATE HAND TOOLS, SIMPLE MACHINES, DROUGHT-RESISTANT AND BLIGHT RESISTANT CROPS AND THE LIKE.

(MORE)

THERE IS NO SIMPLE SOLUTION TO SOLVING WORLD HUNGER. WHAT IS WORKING IN LATIN AMERICA OR ASIA MAY NOT BE APPROPRIATE FOR AFRICA.

BUT IT IS CLEAR THAT THE UNITED STATES AND OTHER DEVELOPED NATIONS MUST WORK TOGETHER AND GO BEYOND THE BAND-AID APPROACH TO THE PROBLEM.

WE MUST THINK AND ACT IN THE LONG-TERM. WE MUST ACHIEVE A BALANCE BETWEEN FOOD AND PEOPLE.

WE MUST FOLLOW THE PREMISE THAT POPULATION AND HUNGER ARE TIED TOGETHER INEXTRICABLY.

I LOOK FORWARD TO HEARING THE TESTIMONY OF THE EXPERT WITNESSES BEFORE YOU TODAY ON WHERE OUR ASSISTANCE CAN BE MOST EFFECTIVE IN CLOSING THE GAP BETWEEN POPULATION GROWTH RATES AND FOOD PRODUCTION.

# # #

PREPARED STATEMENT OF HON. JOHN E. PORTER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ILLINOIS

Mr. Chairman, thank you for the opportunity to testify before your committee.

We are faced within the next two to three decades with a projected addition of over two billion people to the earth's population. This will have serious consequences for the world's land, climate and food supply. Severe worldwide hunger will increase as a result of this unrestrained population growth.

This grim scenario is a problem as far reaching as any confronting humanity. The lack of voluntary family planning services threatens the lives of many and the quality of life for all. It is also clear that the availability of voluntary family planning programs, properly administered, can help solve some of the long-term problems which this committee is concerned with.

Mr. Chairman, your committee can play a key role in assuring that famine is averted and the quality of life is maintained by supporting efforts to fund voluntary family planning programs. I define quality of life in terms of access to such essential services as education, health care, adequate housing, good working conditions and, of course, adequate food supply and proper nutrition.

We have to look no further than Latin America in our own hemisphere to find a prime example of serious problems caused by high birth rates. These problems include inadequate nutrition and food resources. And although there is widespread agreement that a lower birth rate would help in improving the quality of life in developing countries, medical advances often work contrary to a country's efforts to control its population growth.

Many may feel that we are crying "wolf" in presenting the problems associated with population and development. However, the following statistics speak for themselves:

*Between the Rio Grande and Cape Horn there are between 30 and 40 million children living without the love and support of a family. While the area represents only 10% of the world's children, it has more than 50% of the world's street children.

*In Latin America, 140 of 1000 births are to women between the ages of 15 and 19, compared to 52 per 1000 births to women in the same age group in the United States (which is also considered high).

*Between 1974 and 1984, the world's population has increased by 770 million, and 90 per cent of that increase has occurred in the developing countries. In the majority of these countries, increases in population have contributed to increasing imports versus exports--food in particular.

*In many developing countries, population has continued to grow rapidly, aggravating such environmental and natural resource problems as soil erosion, deforestration and desertification, which affect food and agricultural production.

Recent studies have indicated that Latin America's unchecked population growth is beginning to have an impact on the United States- through massive migration to the southern and southwestern U.S.- an added reason to pay serious attention to the issue. Studies have projected that by 2001 the population of Latin America will be approximately twice that of North America. While Latin America's population is increasing, food output is decreasing. Government officials in Latin America have come to the conclusion that unchecked population growth spells disaster in the long run and extreme instability in shorter terms.

The Ethiopian disaster, while clearly resulting from drought and government disincentives for agricultural production, also must be ascribed in part to unchecked population growth.

Some countries have taken drastic actions to avert the certainty of similar problems. China, for example, has apparently implicitly condoned forced abortions, economic coercion and even infanticide to check burgeoning population growth. No civilized society can support such an approach and I condemn it in the strongest possible terms. Unfortunately, however, our reaction to it may be one that undermines the strong foundation of support for voluntary family planning that has been built through six U.S. administrations by both parties.

I strongly urge the Congress to communicate to the Administration the message that we will not tolerate coercive family planning practices by China or any other government, but neither will we allow this situation to destroy the substantial progress of the last twenty-five years in support of voluntary family planning programs.

Congress has been the leader in efforts to assure that funding for voluntary international population planning efforts is maintained. Congress has acted with great wisdom in establishing a domestic program of family planning services and an international program of population assistance. We provided the initial funding to A.I.D. to support international family planning initiatives. Because of the bi-partisan support from legislators in both political parties, we have been able to provide modest funding increases for these initiatives. At the Mexico Conference in 1984 I was pleased to join with four other members of Congress to present to developing nations our bi-partisan support for voluntary international family planning efforts.

We in Congress need to continue to demonstrate the collective political will to involve ourselves in actively supporting international efforts to address world population and development issues. These issues have a direct impact on hunger and nutrition especially in the developing countries. In a few weeks, I will be attending the first-ever Conference of Caribbean Parliamentarians on Population and Development. I will be participating with more than 70 international parliamentarians, including ministers of health and elected officials, in discussing the major population issues facing almost every country in the English-speaking Caribbean. These issues range from the high rate of teenage pregnancy and the annual exodus of emigrants from the Caribbean every year to the United States, Canada and other developed countries to the effects of population growth on employment. In all, some 18 countries in the Caribbean along with the United States and Canada will be represented.

This conference will permit an extension of the dialogue that members of Congress have initiated with the parliamentarians of other countries. I will communicate the U.S.'s long standing commitment to development and voluntary family planning assistance to other countries. I see this initiative as a very important way of contributing to international efforts to foster voluntary family planning programs as a practical solution helping to alleviate problems of famine and quality of life facing the world today.

I thank the committee for the opportunity to share my views with them on this very serious global problem. I will be happy to answer any questions the committee may have.

APPENDIX

As a matter of background, I am co-founder of the Congressional Coalition on Population and Development, an organization of members of Congress working to encourage sound responses to both international and domestic voluntary family planning issues. In December, 1982, I headed our American delegation to the Western Hemisphere Conference of Parliamentarians on Population and Development in Brasilia and delivered to the conference President Reagan's greetings and remarks. Previously, I had visited China and India in 1981 and saw first-hand the many problems created by unrestrained population growth. I was an observer at the United Nations World Conference on Population in Mexico City last August. I am also Vice Chair for the Western Hemisphere of the Inter-American Parliamentarians Group on Population and Development.

[Excerpt From State of the World—1985]

RESHAPING POPULATION POLICIES TO IMPROVE NUTRITION

(By Lester R. Brown, President, Worldwatch Institute)

During the third quarter of this century world food production surged ahead, outstripping population growth and holding out the hope that hunger could be banished. Over the last decade, however, growth in production has slowed, raising doubts about the long-term food prospect. Despite advances in technology, the effort to reduce hunger is at a standstill. The failure to adequately feed all of humanity hangs heavily on the collective conscience, dimming the many remarkable achievements of the late twentieth century.

The shifting contours of the world food economy are dominated by two major developments. One is the leveling off of per capita food production since 1973 following a quarter-century of steady gains. The other is the divergence among continents and major countries that this global trend obscures. In some regions per capita food production is surging ahead; in others it is falling steadily.

China and Africa illustrate these contrasts, as discussed in Chapter 1. The impressive gains in per capita grain production in China have provided that country with a substantial safety margin, one that would permit it to weather two successive poor harvests without any serious malnutrition. In Africa, on the other hand, the food situation is deteriorating. The 1 percent annual decline in per capita grain output since 1967 has been aggravated by the drought of 1983 and 1984. Even before the drought, nearly a fifth of Africa's people were being sustained by imported grain.[1]

There is a similarly sharp contrast in the agricultural performances of the United States and the Soviet Union. Over the past generation the United States has become the world's breadbasket, supplying a larger share of world grain imports than Saudi Arabia does of oil imports. Meanwhile, the Soviet Union, which has both the world's largest cropland area and a farm sector plagued by mismanagement and undermined by soil erosion, is now projected to import a record 50 million tons of grain this year, more than any country in history. Ironically, its principal supplier is the United States. Each day two U.S. freighters loaded with grain head for the Soviet Union, indicating that economic interests can override ideological differences. Indeed, the long line of ships that links American farms with Soviet dining tables may carry within it the seeds of a lasting detente.

THE CROPLAND TREND

From the beginning of agriculture until roughly mid-century, growth in the world's cropland area more or less kept pace with that of world population. The great bulk of the year-to-year growth in food supply came from expanding cultivated area. Improvements in land productivity came slowly or not at all. At mid-century, this began to change. A 1984 study by the U.S. Department of Agriculture (USDA) showed that growth in the world's cropland slowed markedly during the fifties, averaging less than 1 percent per year—roughly half that of population. Thereafter the rate of growth in cropland area continued to slow, falling below 0.3 percent per year in the seventies. USDA projects that this slowing will continue, falling to 0.2 percent in the eighties and 0.15 percent in the nineties. (See Table 2-1.) If these trends do materialize, the world cropland base will expand about 4 percent between 1980 and 2000, while population growth is projected to expand by some 40 percent.[3]

Table 2-1. Estimated Growth in World Cropland Area, 1950–80, With Projections to 2000

Period	Growth Per Year
	(percent)
Late fifties	1.0
Seventies	0.3
Eighties	0.2
Nineties	0.15

SOURCE: Francis Urban and Thomas Vollrath, *Patterns and Trends in World Agricultural Land Use* (Washington, D.C.: U.S. Government Printing Office, 1984).

Net growth in the world cropland area in any given year reflects the difference between the majority of countries, which are still adding some new cropland, and a much smaller, though growing, number where the cropland area is shrinking. In some of the latter group the shrinkage results from the abandonment of marginal land in favor of more-intensive use of the most productive land. Such decline has been under way now for close to two decades in Western Europe, Eastern Europe, and Eastern Asia, including both China and Japan. In West Germany and Poland, for example, the postwar peak in arable land area occurred in 1955. In France, Japan, and Yugoslavia, it was 1960; in China, the peak was in 1963.[4]

Roughly a third of the world's people now live in countries where cropland area is shrinking.

Roughly 1.5 billion of the world's people, about a third of the total, now live in countries where cropland area is shrinking. China and Italy, for example, have lost 5.1 and 4.8 percent of their cropland since the decline began. (See Table 2-2.) Changes such as these reflect the relationship between the numerous plus and minus forces affecting the cropland area. Expansion commonly results from pushing back the frontiers of settlement, irrigation projects, drainage projects, the clearing of forests, or the plowing of grassland. The addition by new settlement projects is perhaps best illustrated by Brazil, which is encouraging new farms and ranches in the Cerrado and the Amazon Basin, and by Indonesia, which is attempting to resettle people from densely populated Java to the outer islands of Sumatra, Kalimantan, and Sulawesi.

New irrigation projects have played a central role in adding to the cultivated area of semiarid countries such as Pakistan and Mexico. Indeed, throughout history irrigation has played a major role in boosting cropland productivity and expanding the earth's food-producing capacities. The growing pressures on this key input to agricultural production are discussed at length in Chapter 3.

Land reclamation by drainage figures prominently in the Soviet Union, where some 700,000 hectares per year is to be reclaimed during the early eighties. For the Soviet Union, at least, this rivals the annual additions from irrigation. In Central America, cropland area expansion comes at the expense of forests, while in East Africa and Argentina recent growth has come mostly from grassland conversion. The same has been true for some of the Great Plains states in the United States; Colorado's Weld County and Montana's Petroleum County have taken steps to prohibit the plowing of grasslands, which are vulnerable to wind erosion once the grass cover is removed.[4]

Table 2-2. Selected Countries With Declining Cropland Area, 1980

Country	Postwar Peak in Arable Land Area	Decline From Peak Year to 1980
	(year)	(percent)
China	1965	−5.1
France	1960	−13.3
Hungary	1955	−6.6
Ireland	1960	−29.4
Italy	1955	−4.8
Japan	1960	−19.6
Netherlands	1955	−18.0
Poland	1955	−9.7
Portugal	1965	−18.1
South Korea	1968	−5.3
Sweden	1955	−21.0
West Germany	1955	−13.9
Yugoslavia	1960	−5.6

SOURCE: Francis Urban and Thomas Vollrath, *Patterns and Trends in World Agricultural Land Use* (Washington, D.C.: U.S. Government Printing Office, 1984).

On the other side of the ledger, cropland can be lost to such nonfarm uses as industrialization and to urbanization, one of the most globally pervasive demographic trends of this century. According to U.N. projections, the urban share of world population is projected to increase from 29 percent in 1950 to 50 percent by 2000, boosting the number of city-dwellers from 725 million to a projected 3.1 billion.[5]

The amount of cropland disappearing under cities is not known, but individual country data and various surveys do provide some indication. For example, two USDA surveys—one in 1967 and the other in 1975—indicated that some 2.5 million hectares of prime U.S. cropland were converted to urban and built-up uses during the eight-year period. A study of urban encroachment on agricultural land in Europe (grasslands as well as croplands) from 1960 to 1970 found that West Germany was losing 0.25 percent of its agricultural land yearly, or 1 percent every four years. For France and the United Kingdom, the comparable figure was 0.18 percent per year, nearly 2 percent for the decade.[6]

While attention has focused on urban encroachment, cropland is also being lost to village expansion. Unfortunately, little research has been conducted on this loss. In one analysis using data over several decades for his native Ban-

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gladesh, Akef Quazi concludes that growth in the number of families and that of the area occupied by the village are closely related. One reason for this correlation is that homes are "made up of locally available materials, such as bamboo, thatch, and corrugated iron sheets and, as such, are never strong enough to hold an upper story." Quazi reports that "every new village homestead is being built on cropland." Although undoubtedly there are occasional exceptions, Quazi's general point is a sound one, for Bengali villages are usually surrounded by the rice fields on which they depend.[7]

Further east, in Beijing, Chinese planners are becoming alarmed over the loss of cropland to village home construction. One consequence of the shift to a family-based, market-oriented farm system is that the millions of peasants who are becoming wealthy invariably make building a new home their top priority. Planners in Beijing have concluded that one way to minimize cropland conversion is to encourage peasants to construct two-story homes. Even so, the new affluence in the countryside is exacting a heavy toll on scarce cropland.[8]

Apart from the expansion of human settlements per se, industrialization also consumes large areas of land. Indeed, one of the principal causes of cropland shrinkage in Western Europe and Japan since the mid-fifties has been factory construction, which was particularly rapid from the mid-fifties through the mid-seventies. More recently, industrial development has begun to claim land in developing countries as well. Land-hungry China has been especially affected: Factories must be built in the east and south, where most Chinese live, which is also where most farmland is located. Dwight Perkins, a Harvard scholar on China, notes that the 10 percent annual industrial growth steadily consumes cropland. He believes planners are aware of this but that "there is no way around the fact that good farmland (flat, located near transport; etc.) often makes an excellent factory site."[9]

The automobilization of societies also claims cropland for highways, parking lots, garages, and filling stations. Growth in the world automobile fleet from 48 million in 1950 to 331 million in 1982 has claimed millions of hectares of farmland for these purposes.[10] As with factory sites, the flat, well-drained land that is ideal for farming is also well-suited for highways and parking lots.

In addition to the conversion of cropland to nonfarm uses, excessive economic demands and mismanagement are claiming cropland through desertification, severe erosion, waterlogging and salinization of irrigated land, and the diversion of irrigation water to nonfarm uses. Soil erosion claims cropland either through sheet erosion or as a result of gully formation. Although severe gullying, leading to land abandonment, is now commonplace, it has received the least official attention where it is most advanced. A U.N. report on cropland in Latin America notes its severe dimensions in the Andean countries, where gullys are advancing through the steeply sloping countryside like the tentacles of a giant malignancy. As these gullys eat their way across fields, farmers who are already hungry for land continue to till what is left, right up to the gully's edge —thus accelerating its progress across the land.[11]

A report for Europe describes the extensive abandonment of farmland in Italy: "It is generally agreed that in Italy 2 million hectares have been abandoned in the last ten years. . . . The farming measures used on this marginal land have led to deterioration of the soil so that the land was consumed in the literal sense of the term."[12] Similarly, some of the decline in the harvested area of cereals in Yugoslavia and Bulgaria over the past two decades reflects the movement from eroded, worn-out soils in farm areas with rugged terrain.[13]

Other sources of cropland loss have received little attention. For example, land for burial has claimed millions of hectares over the past generation. In most countries this loss is minimized by using cemeteries. But in China, as mentioned in Chapter 1, the dead are buried under mounds that are often located on good farmland. A study of this practice in the immediate vicinity of Beijing reported that from 1949 until 1964 burial mounds claimed 213 hectares (526 acres) of fertile cropland. Multiplied thousands of times over for the country as a whole, it is clear why this loss concerns Chinese political leaders. Accordingly, the government has launched a campaign to encourage cremation. Zhang Yizhi, an official in the ministry of civil affairs, observes that "we have to practice cremation in cities and in densely-populated rural areas. Otherwise the living and the dead will have to scramble for land." Although it is difficult to persuade people to change centuries-old traditions, Zhang believes that the shift to the family responsibility system will facilitate this transition: "If the peasants want to become more prosperous, they will not be able to let the dead occupy the limited land that is available for farming."[14]

Another factor in the world cropland equation is the low productivity of the new fields. In Nigeria and Brazil, where expansion of cultivated area has been greatest, cereal yields have increased little or none since 1950. The increasing use of fertilizer and other inputs is being offset by the declining quality of cropland.[15]

In some countries, the land lost to nonfarm uses is being replaced by land of lower productivity. The Science Council of Canada reports that "half of the farmland lost to urban expansion is coming from the best one twentieth of our farmland."[16] It takes an estimated 240 acres of new land in Canada's western provinces to replace 100 acres of land lost to urban expansion in the higher-rainfall eastern provinces. And in some countries there has been a "retreat from the margin" because of overexpansion. This occurred in the Soviet Union during the early eighties, for example, as a result of overexpansion into marginal lands.

By the year 2000 the area of new land to be plowed will obviously be limited. Indeed, new land being added will barely offset the losses projected. For planning purposes it is best to assume that virtually all growth in world food output by century's end will have to come from raising land productivity.

WATER AND BREAD

The lack of unexploited water resources may constrain growth in world food output even more than the scarcity of unexploited fertile land. In countries as widely separated as Mexico and Pakistan, freshwater scarcity prevents the spread of high-yielding wheats. In the Soviet Union, water shortages are frustrating efforts to expand feedgrain production for that country's swelling livestock herds. As new irrigation options are exhausted, the link between water and bread becomes increasingly obvious.

Although irrigated agriculture started several thousand years ago, only in the twentieth century has it covered much of the earth's surface. (For a fuller discussion of the reliance on irrigation throughout the world, see Chapter 3.) In 1800 an estimated 8 million hectares of the world's cropland were irrigated. Although irrigation increased substantially from 1900 to 1950, the bulk of the expansion has occurred since then, with the total irrigated area reaching 261 million hectares by 1982. (See Table 2-3.)

Some 15 percent of the world's cropland is irrigated, up from 11 percent in the early sixties. Although irrigation was once concentrated in the Middle East, where it first developed, the center of gravity has now shifted to Asia. As of 1980, 120 million hectares of the world's 261 million irrigated hectares—some 46 percent—were located in Asia. Today the Middle East and North Africa account for only 8 percent of the world total, as does the Soviet Union, and less than 10 percent is in the United States. Latin America accounts for under 10 percent of the world's irrigated land and subsaharan Africa has only 2 percent.[17]

Irrigation can use either underground water or surface water from rivers, streams, or lakes. Early irrigation systems relied on surface water, usually that which was backed up behind an embankment of some sort so that it would flow by gravity onto the fields. Using underground water requires more energy since the water must be lifted. Irrigation-water distribution techniques also vary. For crops such as rice, flooding is commonly used. Water is fed or pumped onto a field enclosed by a small embankment until the entire surface is covered. This system requires that land be flat, either naturally or as a result of artificial leveling. Another traditional practice, furrow irrigation, is commonly used for row crops such as corn, potatoes, and vegetables. With the advent of cheap energy, many farmers pumping water from underground began distributing the water through sprinkler systems, an energy-intensive method.

Table 2-3. Estimated World Irrigated Area, 1900–82

Year	Irrigated Area
	(million hectares)
1900	40
1950	94
1982	261

SOURCE: W. R. Rangeley, "Irrigation—Current Trends and a Future Perspective," World Bank Seminar, Washington, D.C., February 1983.

At the country level, irrigation plays an important role in each of the big four food producers—the United States, the Soviet Union, China, and India. Growth in irrigated area in China since mid-century has been impressive, increasing from scarcely 20 million hectares in 1950 to some 48 million by 1980. Much of the increase was achieved by labor-intensive construction practices, and it is largely responsible for the increase in multiple cropping from an average of 1.3 crops per hectare in 1950 to 1.6 in 1980.[18]

India's net irrigated area in 1950 was 21 million hectares, almost exactly the same as China's. But as of 1980 it totaled only some 39 million hectares. The most rapid growth has occurred since the mid-sixties, following the introduction of high-yielding wheat and rice varieties that were both more responsive to the use of water and more exacting in their demands. This enhanced profitability stimulated widespread investments by small farmers in wells of their own so they could more fully exploit the yield potential of the new varieties.[19]

U.S. irrigated area has expanded throughout the period from 1950 to 1978 but at a decelerating rate. Growth in the irrigated area from the mid-fifties through the mid-seventies was concentrated in the southern Great Plains, largely based on water from the Ogallala aquifer. Since 1978 U.S. irrigated area has actually declined as a result of that aquifer's depletion and the diversion of water to nonfarm uses in the sunbelt states.[20]

Soviet irrigated area has grown steadily in recent decades. With some 18 million hectares under irrigation, Soviet plans call for an addition of roughly 700,000 hectares a year during the mid-eighties. An annual growth rate of nearly 4 percent makes this sector one of the fastest-growing in the Soviet economy. Such increase reflects the urgency that the Soviets attach to expanding the irrigated area, because for them it both boosts food production and minimizes the wide swings in crop output that result from highly variable rainfall.[21]

Irrigation often holds the key to cropping intensity, especially in monsoonal climates where the wet season is followed by dry months with little or no rain. Where temperatures permit year-round cropping, as they often do where the monsoon dominates rainfall, irrigation permits the production of two, three, or even more crops per year.

A billion and a half people are now fed with the additional food produced with chemical fertilizer.

Given the projected growth in world food demand, the irrigated area is certain to expand. The question is how rapidly. Projections by the U.N. Food and Agriculture Organization (FAO) show a possible 53 million hectares being added between 1980 and 1990, an increase of one fourth within a decade.[22] Whether or not these figures do materialize will be influenced by capital availability. Not only does it take a great deal of capital to irrigate this much land, but the cost per hectare of future expansion is rising since the least costly sites have largely been developed.

As the cost of bringing new land under irrigation rises at the margin, and as the cost of energy to pump underground water also rises, attention will focus more on improving the efficiency of both existing irrigation systems and water use. Unfortunately, the world in the mid-eighties is not paying any more attention to water-use efficiency than it was to oil-use efficiency in 1970. Increasingly, modification of irrigation practices to use water more economically will be the key to expanding irrigated food production.

THE FERTILIZER LINK

The mid-nineteenth-century discovery by German agricultural chemist Justus von Liebig that it was possible to replace all the nutrients removed from the soil by crops led to the modern chemical fertilizer industry. More than any other technological advance, it has spurred some remarkable food production gains.

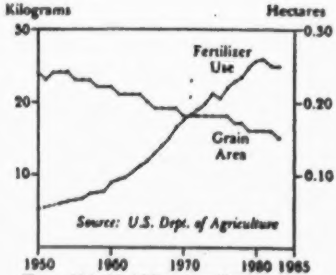
In the years following von Liebig's discovery, an embryonic chemical fertilizer industry developed, but a century was to pass before the industry came into its own, emerging as an important industrial sector of the world economy. As the frontiers of agricultural settlement disappeared after World War II and as population growth accelerated, demand for fertilizer began to climb. In 1950 the world used less than 14 million tons of chemical fertilizer. Within a decade that figure had doubled. And in the next decade it doubled again. By 1984 world fertilizer consumption totaled 121 million tons, nearly a ninefold increase in 34 years. (See Table 2-4.) Eliminating its use today would probably cut world food production by at least a third. At a minimum, a billion and a half people are now fed with the additional food produced with chemical fertilizer.

Table 2-4. World Fertilizer Use, 1950–84

Year	Fertilizer Use
	(million metric tons)
1950	13.5
1955	18.3
1960	27.0
1965	23.1
1970	63.0
1971	68.3
1972	72.0
1973	77.2
1974	83.6
1975	82.4
1976	90.0
1977	95.6
1978	99.4
1979	106.9
1980	113.1
1981	116.1
1982	114.3
1983	116.1
1984	121.0

SOURCE: U.N. Food and Agriculture Organization, *FAO 1977 Annual Fertilizer Review* (Rome: 1978), Paul Andrilenas, U.S. Department of Agriculture, private communication, September 1983, and Worldwatch Institute estimates for 1984.

The increase in world fertilizer use since mid-century has been driven by population growth and by the expanding appetite for animal protein. As the stork outruns the plow, the role of fertilizer increases. The reduction in world cropland area per person since 1950 has been offset by raising per capita fertilizer use from 5 kilograms in 1950 to over 25 kilograms by 1980. In simple terms, more people now means less cropland per person, requiring more fertilizer to satisfy a given dietary level. (See Figure 2-1.)



Source: U.S. Dept. of Agriculture

Figure 10-1. World Fertilizer Use and Grain Area Per Person, 1950-83

The soil nutrients most needed by plants are nitrogen, phosphorus, and potassium. Many other elements also feed plants: Magnesium, calcium, and sulfur, for example, are considered minor nutrients. And there are trace nutrients such as zinc, boron, and copper. In both quantitative and economic terms, however, the chemical fertilizer industry is based almost entirely on nitrogenous, phosphatic, and potassic fertilizers. Among these three, nitrogen dominates, accounting for just over half of world fertilizer output; phosphate and potash account for roughly one quarter each.[23]

Historically, Western Europe, the United States, and Japan dominated world output but since nitrogen fertilizer is synthesized from atmospheric nitrogen, it can be produced wherever energy is available. Following the 1973 oil price increase, most new nitrogen plants have been built in oil-exporting countries, particularly those that flare natural gas. Since so many of these are developing countries—China, India, Indonesia, Mexico, and several Middle Eastern oil exporters—this shift has markedly boosted the Third World share of nitrogen fertilizer production.[24]

Phosphate and potash, on the other

hand, are mined only by the handful of countries that have indigenous reserves. Most of the world's phosphate is mined in Morocco and the United States, principally in Florida. In 1980 these two countries together exported 31 million tons of phosphate rock, nearly three fifths of the world total. Most of the remainder was exported by Jordan and Israel in the Middle East; by Togo, Tunisia, and Senegal in Africa; and by the Soviet Union.[25]

Production of potash, the third major nutrient, is dominated by the Soviet Union and Canada, which together account for 55 percent of world production capacity. East and West Germany divide rather equally an additional 21 percent, and most of the remainder is produced in the United States and France. Given the international interdependence of the world fertilizer economy, anything that affects international trade—such as export embargoes, the formation of export cartels, or external debt—can affect farmers' use of phosphate or potash.[26]

World fertilizer consumption, like the production of nitrogen fertilizer, is shifting toward the Third World. As of 1981 the industrial countries were consuming 72 million tons of chemical fertilizer, 63 percent of the world total. Developing countries were using 43 million tons, just over a third of the total, but their consumption has been growing far more rapidly, suggesting that by the year 2000 usage may be rather evenly divided between the North and the South, though per capita use will be far higher in the former.[27]

All the big four food producers are heavy users of fertilizer. The Soviet Union, which has invested heavily in manufacturing facilities, now uses more fertilizer than any other country except the United States. Despite this edge, Soviet grain output is scarcely half that of the United States, confirming the widespread inefficiency in fertilizer use that is regularly reported in Soviet journals.[28]

Fertilizer application rates vary widely not only among countries but also among different crops. Countries with the most fertilizer-intensive agriculture include Japan and several in Western Europe. U.S. farmers in the corn belt also apply fertilizer quite generously, whereas those in the semiarid western plains use it sparingly. Cereals, grown on some 70 percent of the world's cropland, account for the largest share of fertilizer use. Other heavily fertilized crops include cash crops, particularly those grown for export such as cotton and tobacco.

In recent years the growth in world fertilizer use has slowed markedly. After growing 7.5 percent annually from 1950 through 1973, it dropped to 5.6 percent per year during 1973–79 and to 2.5 percent per year since the 1979 oil price increase. (See Table 2-5.) This slowdown is not due to any single influence but rather to several, many of them associated directly or indirectly with rising oil prices.

Table 2-5. World Grain Production and Fertilizer Use at Three Oil Price Levels, 1950–84

Period	Oil Price Per Barrel	Annual Growth: Grain Production	Annual Growth: Fertilizer Use
	(current dollars)	(percent)	
1950–73	2	3.1	7.5
1973–79	12	1.9	5.6
1979–84[1]	28	2.0	2.5

[1] 1984 grain production and fertilizer use estimated by Worldwatch Institute.

SOURCES: Based on data from International Monetary Fund and U.S. Department of Agriculture.

Where fertilizer use is high, diminishing returns are setting in. As applications increase, so do crop yields, but only up to a point. At the lower levels of use the crop yield response to each additional kilogram of fertilizer is strong, but as application rates rise the increase diminishes, until eventually there is no response. A broad-brush comparison of changes in the ratio of world grain production to fertilizer use over time confirms this diminishing response. In 1950 world fertilizer use was just under 14 million tons and grain production was 623 million tons, yielding 46 tons of grain produced for every ton of fertilizer used. Fifteen years later this response ratio had been cut in half, with each ton of fertilizer yielding some 23 tons of grain. By 1979 the ratio had fallen to just over 13, where it has remained for the last four years. This leveling off suggests that farmers are not finding it profitable to increase greatly their use of chemical fertilizer.[29]

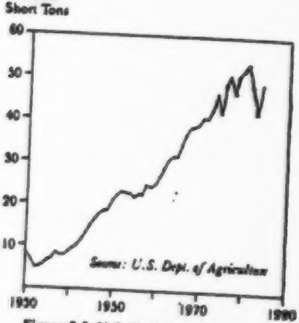
In many Third World countries, mounting foreign debt has constrained fertilizer use. The more foreign exchange required to service debt, the less is available for importing fertilizer. Brazil, for example—the western hemisphere's second ranking food producer—has severely restricted its fertilizer imports. Several other heavily indebted Third World countries have done the same.[30]

Closely associated with both external debt and internal deficits is the pressure to reduce or eliminate subsidies for fertilizer use and for food consumption, both of which reduce the profitability of fertilizer use. In some instances national governments have decided on their own to reduce these subsidies in an effort to lower deficits. In other cases the pressure has come from the International Monetary Fund as a condition for continued funding or for the renegotiation of debt repayment.[31]

Fertilizer consumption has also lagged because of depressed economic conditions in rural areas. Weak farm prices and mounting farm debt have even arrested the growth in fertilizer consumption in the United States. After an extraordinary growth, stretching from 1940 through 1980, fertilizer use in the world's leading food producer dropped sharply during the early eighties. (See Figure 2-2.)

Where intensive agriculture is practiced, as in the U.S. corn belt, the energy embodied in the fertilizer—including that used in manufacturing, transporting and applying it—often exceeds that used as tractor fuel. Of the total energy invested in fertilizer, roughly four fifths is used to produce it and one fifth to distribute and apply it. Some 70 percent of nitrogenous fertilizer is produced with natural gas, and the remainder is produced with naphtha, fuel oil, and coal. But regardless of the energy source, rising energy costs are reducing the profitability of fertilizer use.[32]

The ratio between the price of grain and that of fertilizer has changed over the past few decades, and the real cost of fertilizer now constrains use to some ex-



Source: U.S. Dept. of Agriculture

Figure 2-2. U.S. Fertilizer Consumption (Material Weight), 1930-84

tent. For example, in the United States 3.4 tons of wheat were required to purchase a ton of nitrogen fertilizer in 1960. A breakthrough in nitrogen synthesis in 1963 increased the energy efficiency of synthetic nitrogen fixation by some 40 percent and reduced nitrogen fertilizer costs beginning in the late sixties. As use of this new technology spread, fertilizer prices declined. By the early seventies only 1.6 tons of wheat were needed to buy a ton of nitrogen fertilizer. After the oil price hikes of 1973 this trend was reversed, however, and the amount of grain required to purchase a given amount of fertilizer increased somewhat. In 1984, some 2.1 tons of wheat bought one ton of nitrogen fertilizer.[33]

In contrast to the 1950–80 period, when world fertilizer use increased rather predictably, it has become quite erratic since 1980—sometimes increasing, sometimes decreasing, but certainly not maintaining the uninterrupted growth of the preceding three decades. As a general matter the fertilizer use projections of recent years have been lowered with each successive assessment. When the FAO did its *Agriculture: Toward 2000* study in 1979, it projected that fertilizer consumption in the 90 developing countries (excluding China) would increase from 19 million tons in 1980 to 93 million tons by the end of the century.[34] This increase of 8.3 percent per year was consistent with the historical trend, but it now appears that growth will be far slower, that the future will not be a simple extrapolation of the past.

Projections of global use are also being downgraded. An assessment undertaken in 1981 by an FAO/U.N. Industrial Development Organization/World Bank group projected that by 1985–86 world fertilizer use would reach 147 million tons. By early 1984 USDA was projecting 1988 world usage at 142 million tons of fertilizer.[35]

Future fertilizer use will be influenced heavily by the continuing spread of irrigation and by the energy/food-price relationship. However, in at least one major food-producing region—the southern Great Plains of the United States—the irrigated area has begun to decline, making substantial further growth in fertilizer use there unlikely. Energy prices over the long term seem certain to rise. Offsetting this at least partially is the temporary shift toward the use of flared natural gas as a nitrogen fertilizer feedstock. As long as gas supplies hold up, this will tend to check the rise in nitrogen fertilizer manufacturing costs, though not those of phosphate and potash.

ADVANCES IN TECHNOLOGY

Any assessment of the world food prospect must consider advances in agricultural technology. The doubling of world food output over the past generation is largely the product of the expanded use of irrigation, chemical fertilizer, and improved varieties. With cereals, which dominate food output, the development of hybrid corn and the dwarf rices and wheats have been centrally important.

Interestingly, the basic discoveries that led to these advances are by no means recent. Early agriculturalists in the Middle East discovered that diverting river water onto their fields increased their yields. The principles of chemical fertilization were discovered more than a century ago. Likewise, the laws of heredity were first formulated by Mendel in the mid-nineteenth century. It was the massive application of these interacting technologies and insights after World War II, however, that set the stage for the unprecedented growth in world food supplies.

The mid-eighties are a particularly rich time in agricultural research, with advances in biotechnology—including recombinant DNA, tissue culture, and cloning—opening new frontiers in farm technology. Exciting though these technologies are, they have nonetheless been greatly overplayed by the popular press. The goals of agricultural research remain the same—how to get more grain per hectare of land or more milk per cow.

The goals of agricultural research remain the same—how to get more grain per hectare of land or more milk per cow.

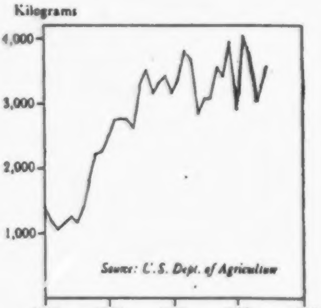
Biotechnology can help accelerate the research effort. It is not a new tool kit but an additional tool to put in the existing kit, one that will further progress toward existing goals. Its role is put into perspective by Thomas N. Urban, president of Pioneer Hi-Bred International, the world's largest producer of hybrid seed corn. He observes that "the new techniques will be helpful in speeding up our work but they will not change conventional breeding methods."[36] The same point was made by the U.S. Office of Technology Assessment in its 1981 report on applied genetics: "The new tools will be used to complement, but not replace, the well-established practices of plant and animal breeding."[37]

An examination of the historical yield trend of the three principal cereals grown in the United States—corn, wheat, and sorghum—provides both some sense of the potential for raising yields in countries where agricultural modernization is only beginning and an indication of the longer-term constraints in agriculturally advanced societies.[38]

The yield trend for grain sorghum in the United States since mid-century illustrates clearly the S-shaped curve that biologists expect all biological growth functions to follow. (See Figure 2-3.) From the mid-fifties until the late sixties, yields of this crop nearly tripled, climbing from 1,200 kilograms to 3,300 kilograms per hectare. This remarkable growth was made possible by the rapid spread of hybrid sorghum and irrigation, particularly in the U.S. southern plains, and by heavy increases in chemical fertilizer applications. The principal benefits from these three technologies came between 1955 and 1966, the steeply rising part of the S-shaped curve.

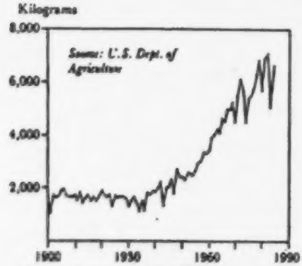
Although there has been some fluctuation since then, there is little indication of any further increase in average yield. Lacking another major breakthrough of some sort, future increases in U.S. sorghum yields are likely to be modest. Indeed, as the Ogallala aquifer under the southern plains is depleted, many farmers will revert to dryland farming, in which case sorghum yields in 2000 could well be markedly lower than today.

Corn yields have also increased dramatically, nearly tripling between 1950 and the early eighties. (See Figure 2-4.) This impressive gain is primarily the result of continuously improving hy-



Source: U.S. Dept. of Agriculture

Figure 2-3. U.S. Grain Sorghum Yield Per Hectare, 1950-84



Source: U.S. Dept. of Agriculture

Figure 2-4. U.S. Corn Yield Per Hectare, 1900-84

brids interacting with the increasing application of chemical fertilizer. Although the rise in corn yields has slowed since the early seventies, it still shows a modest upward trend. As with sorghum, U.S. corn yields have also shown greater variability as they increased.

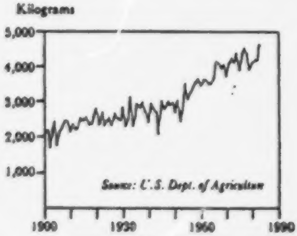
Year-to-year fluctuations from 1950 through 1969 were quite modest. In 1970, however, when the corn blight struck, yields dropped sharply because the predominant corn varieties contained little resistant stock. Yields declined even further in 1974 because of bad weather—a combination of heavy spring rains that postponed planting and an early frost that damaged much of the crop before it was ripe. And in 1980 and 1983, drought played a major role. It will be some years before it can be determined whether U.S. corn yields are leveling off as those for sorghum have.

With wheat, yield increases in the United States have been less dramatic than for corn or sorghum. But after several years of static or declining levels during the seventies, they have resumed their upward trend. In contrast to corn, which is grown under high rainfall conditions, and sorghum, which is planted largely on irrigated land, most U.S. wheat is grown under dryland conditions, thus limiting the potential response to fertilizer use.

Although rice yields in Japan started increasing well before those of cereals in the United States, the steady rise that spanned several decades has been interrupted in recent years. (See Figure 2-5.) Over the last decade there has been little increase in Japanese rice yields, which average roughly 4.5 tons per hectare of milled rice. As with sorghum and corn in the United States, using more fertilizer has little effect on yields.

To assess fully the potential for boosting world food output, current yields in developing countries need to be compared with those of the more agriculturally advanced countries. In the mid-eighties Argentine corn yields, for example, were scarcely half those of the United States, suggesting that over time corn yields in Argentina, a country with similar soils and climate, could be doubled as agriculture modernizes.

Two of the most widely discussed potential breakthroughs in agricultural research are the development of nitrogen-fixing cereals and of more photosynthetically efficient crops. Although the former is technically possible, evidence is mounting that if cereals are engineered to behave like legumes, they will pay a yield penalty. In simplest



Source: U.S. Dept. of Agriculture

Figure 2-5. Rice Yield Per Hectare in Japan, 1900-84

terms, if the nitrogen-fixing bacteria that attach themselves to the roots of the cereals are supported with photosynthate from the plant, the drain on the plant's metabolic energy will reduce the energy available to form grain.

Evidence is mounting that if cereals are engineered to behave like legumes, they will pay a yield penalty.

Sharply increasing the photosynthetic efficiency will not be easy either. Some gains have been made by plant breeders who have improved leaf arrangements in order to collect more sunlight. Dwarf wheats and rices have upright leaves, for example, that enable them to absorb more sunlight than traditional varieties can. Of these two possible advances, only increased photosynthetic efficiency could actually raise yields. Nitrogen fixation by cereals would simply reduce chemical fertilizer use and hence the energy intensity of cereal production. Both breakthroughs are long shots, however, representing basic feats of biological engineering.

In livestock research, there are also signs of diminishing returns. The commercialization of artificial insemination of dairy cows a generation ago set the stage for a rapid upgrading of dairy herds and dramatic advances in milk production per cow. In the United States, milk production per cow tripled over the past generation. More recently, transplanting embryos from superior cows to inferior ones has provided a way to maximize the progeny of highly productive cows. But the role of embryo transplantation in raising dairy herd productivity will be modest compared with that played by artificial insemination: Whereas artificial insemination permits a proven sire to father thousands of offspring per year, an outstanding cow can produce only 50–60 viable embryos per year for transplant into less productive cows.[39]

In applied agricultural research, as in any other area of endeavor governed by economics, the easy things are usually undertaken first. After several decades of sustained progress in raising crop and livestock productivity, it is becoming more difficult to maintain the rate of gain. Returns may be diminishing on investment in agricultural research. Doubling or tripling U.S. research expenditures on sorghum, for example, is not likely to have much effect on yields. Likewise, the ability of researchers in Japan to raise rice yields appears limited, regardless of the level of research expenditures.

The bottom line in assessing the potential of advancing technology to increase world food output rests with photosynthesis, nature's process for converting solar energy into biochemical energy, a form that can be used by animals. This process, which is unlikely to be bypassed, is governed by the basic laws of physics and chemistry—something worth keeping in mind lest pie-in-the-sky assessments of technology achieve more currency than they deserve.

FOOD SECURITY TRENDS

Since 1973, as noted, world grain production has barely kept pace with population growth. (See Table 2-6.) The difference between a 3 percent growth rate of grain production and one of 2 percent is the difference between a world where a rising tide of food output is improving diets across the board and one where food production is barely keeping pace with population. As indicated earlier, the rising price of oil affects the demand for food as well as the supply. The lack of growth in per capita income for the world since 1979 has virtually eliminated the income component of food demand growth. Eliminating hunger and malnutrition thus requires not only producing more food but also raising purchasing power among the poor.

Discussions of food security at the global level commonly focus on food reserves, typically measured in terms of carry-over stocks—those stores of grain on hand when harvest of the new crop begins. (See Table 2-7.) These reserves clearly do provide some security, but the cropland idled under U.S. farm programs is also a reserve, though one year removed. Except during the 1972–75 period, these two reserves together have maintained a remarkable stability in the world grain market.

A poor harvest in the Soviet Union in the summer of 1972, followed by a decision in Moscow to offset crop shortfalls by imports rather than by belt-tightening and also by a U.S. election-year decision to idle a rather large amount of cropland, set the stage for severe world wheat shortages beginning in the late summer of 1972. When poor harvests followed during the next two years in major food-producing regions such as China, the Indian subcontinent, the Soviet Union, and the United States, the rebuilding of world grain stocks was unfortunately delayed.

The combination of carry-over stocks and idled U.S. cropland amounted to the equivalent of 243 million tons of grain in 1984, a decrease from 277 million tons the previous year. Nonetheless, even this reduced level of grain and cropland reserves equaled 56 days of world food consumption, more than enough to maintain relatively stable prices in world grain markets.

With over 90 percent of the world grain harvest consumed in the country in which it is produced, food security, particularly in the poor countries, is influenced by the relationship between growth in food output and that of population.[49] Since 1973, as indicated, the race between food production and population growth has been a standoff. Although per capita grain production for the world as a whole has been static during this period, it has increased steadily

Table 2-6. World Grain Production, Total and Per Capita, at Three Oil Price Levels, 1950–84

		Annual Growth		
Period	Oil Price Per Barrel	Grain Production	Population	Grain Production Per Person
	(current dollars)		(percent)	
1950–73	2	3.1	1.9	1.2
1973–79	12	1.9	1.8	0.1
1979–84	28	2.0	1.7	0.3

SOURCES: International Monetary Fund, *International Financial Statistics*, various issues; U.S. Department of Agriculture Economic Research Service, *World Indices of Agricultural and Food Production, 1950–83* (unpublished printout) (Washington, D.C.: 1984); United Nations, *Monthly Bulletin of Statistics*, New York, various issues.

Table 2-7. Index of World Food Security, 1960–84

	Reserves			
Year	World Carry-Over Stocks of Grain	Grain Equiv. of Idled U.S. Cropland	Total	World Consumption
		(million metric tons)		(days)
1960	200	36	236	104
1965	142	70	212	81
1970	164	71	235	75
1971	183	46	229	71
1972	143	78	221	67
1973	148	25	173	50
1974	133	4	137	41
1975	141	3	144	43
1976	196	3	199	56
1977	194	1	195	53
1978	221	22	243	62
1979	197	16	213	54
1980	187	0	187	47
1981	220	0	220	55
1982	254	13	267	64
1983[1]	185	92	277	65
1984[2]	205	38	243	56

[1] Preliminary. [2] Projection based on May 15 estimate of U.S. cropland idled.

SOURCES: Reserve stocks from U.S. Department of Agriculture (USDA), *Foreign Agriculture Circulars*, October 1983 and May 1984; cropland idled in the United States from Randy Weber, USDA, private communications, August 1983 and June 1984.

in some regions of the world while decreasing in others and showing no perceptible movement up or down in still others.

Among the trouble spots are Africa and the south Andean countries of Latin America, as described in Chapter 1. These regions with declining food production per person typically have fragile ecosystems, most often semiarid or mountainous, and rapid population growth. Africa's postwar peak in per capita grain production came in 1967 at 180 kilograms. By 1982 it had fallen 20 percent. In 1983 it fell an additional 14 percent because of the continent-wide drought. Although in 1970 Africa was nearly self-sufficient in food, by 1984 imports had reached 24 million tons. (See Table 2-8.)

Africa is losing the battle to feed itself. Malnutrition and hunger are on the increase. That so many Africans are starving today is a tragedy. But the even greater tragedy is that African governments and the international community are doing so little about the causal factors. More often than not food-price

Table 2-8. The Changing Pattern of World Grain Trade, 1950–84[1]

Region	1950	1960	1970	1980	1984[2]
			(million metric tons)		
North America	+23	+39	+56	+131	+126
Latin America	+1	0	+4	−10	−4
Western Europe	−22	−25	−30	−16	+13
E. Eur. and Soviet Union	0	0	0	−46	−51
Africa	0	−2	−5	−15	−24
Asia	−6	−17	−37	−63	−80
Australia and New Zeal.	+3	+6	+12	+19	+20

[1] Plus sign indicates net exports; minus sign, net imports. [2] Preliminary.
SOURCES: United Nations Food and Agriculture Organization, *Production Yearbook* (Rome: various years); U.S. Department of Agriculture, *Foreign Agriculture Circulars*, August 1985 and November 1984; adjustments by Worldwatch Institute.

policies are designed to pacify urban consumers rather than to stimulate development in the countryside. Except for a few countries such as Kenya, soil conservation programs are largely nonexistent. African leaders are only beginning to sense the urgency of braking population growth. Family planning programs, where they exist, are still in an embryonic stage.

After Africa, food security is deteriorating most rapidly in mountainous Third World countries, largely because their ecosystems are fragile and highly vulnerable to mismanagement. Land hunger in the Andean countries—Bolivia, Chile, Ecuador, and Peru—is evident in the push of unterraced farming up the mountainsides. Even to the casual observer it is evident that much of the soil on the steeply sloping, freshly plowed mountainsides will soon be washed to the stream beds below, leaving only bare rock and hungry people. One of the most fragile mountain ecosystems is that of Nepal, nestled in the high Himalayas. Grain production per person there peaked in 1961 and has declined some 27 percent or roughly 1 percent per year since then.[41] As with Africa and the Andean countries, there is nothing in prospect in this mountainous kingdom in either farming or family planning that promises to arrest this deterioration in the foreseeable future. For these areas, as for Africa, the prospects for food security are not at all promising.

FOOD PRICES: THE BOTTOM LINE

Assessing the food prospect is not simply a matter of determining in a technical sense how much food the world's farmers can produce. They can produce far more than they now are. The real issue is at what cost and, most importantly, how this cost will relate to the purchasing power of the billion and a half poorest people in the world, who already spend most of their income on food.

The cost of food production is determined by the resources available, such as land, water, fertilizer, and pesticides, and the skill with which they are combined. Historically, advancing technology has more than offset any restrictions imposed by resource availability, but over the past decade or so this has become more difficult. As a result, growth in food production has slowed.

As noted earlier in this chapter, growth in the world's cropland area is now scarcely perceptible. USDA now projects that between 1985 and the end of the century the world cropland area will increase roughly 5 percent, just about enough to provide for one year's increase in demand.[49]

The most important force driving the cost of food production upward is the shrinkage of cropland per person.

Although irrigation has recently played a major role in boosting land productivity, for much of humanity water is becoming scarce. In some situations farmers are overdrawing supplies merely to produce food at current levels. In the United States, for example, the irrigated area actually declined some 3 percent between 1978 and 1982. This new trend is indicative of the growing difficulties in many other parts of the world in expanding the irrigated area. While the irrigated area worldwide will continue to expand, it will not do so nearly as rapidly as in the past.

Perhaps the most important force driving the cost of food production upward is the shrinkage of cropland per person. To maintain per capita food production as cropland shrinks, more purchased inputs must be used, including fertilizer, water, and pesticides. The trends can be measured most precisely for fertilizer. In 1950, when a quarter of a hectare was harvested per person, per capita fertilizer use was 5 kilograms. (See Table 2-9.) In 1984, when this area had shrunk to 0.15 hectares, fertilizer use had increased to 25 kilograms per person. Given the difficulties in expanding the cropland area and the momentum of world population growth, this pattern is certain to continue. As the harvested grain area moves toward one tenth of a hectare at the turn of the century, ever larger amounts of fertilizer will have to be applied to maintain per capita food output, contributing to higher production costs.

Although all projections of world food supply and demand incorporate projections for the cropland area, none take into account the record amount of topsoil being lost from the world's cropland base through erosion. The loss of some 25.4 billion tons of topsoil from the world's cropland in excess of new soil being formed is reducing the inherent productivity of land. The linkage between soil erosion and production costs has been analyzed in detail by an interdisciplinary team of scientists who studied land in southern Iowa. They concluded that a shift of cropland from a slightly eroded to a severely eroded condition would boost annual fertilizer application requirements per acre by 40 pounds of nitrogen, 3 pounds of phosphate, and 15 pounds of potash. This increase in fertilizer would be required

Table 2-9. World Grain Area and Fertilizer Use Per Capita, 1950–84

Year	Grain Area Per Capita	Fertilizer Use Per Capita
	(hectares)	(kilograms)
1950	0.24	5.4
1955	0.23	6.7
1960	0.21	8.9
1965	0.20	11.9
1970	0.18	17.1
1975	0.18	20.4
1980	0.16	25.6
1984	0.15	25.4

SOURCE: Worldwatch Institute estimates, based on data from U.S. Department of Agriculture and United Nations Food and Agriculture Organization.

merely to maintain the output. They also looked at changes in the fuel requirements for tillage as the topsoil washed away, forcing farmers to include more subsoil in the plow layer. Increasing the degree of erosion from slight to severe would raise tillage fuel requirements by 38 percent.[43]

As the fertilizer required to satisfy food needs continues to increase, the world is faced with two rising cost curves. The first is associated with additional expenditures on fertilizer due to the shrinkage of cropland per person. And second, rising energy costs over the long term will increase the cost per unit of chemical fertilizer—the nitrogen, phosphate, and potash—required to boost land productivity.

For the world as a whole to reestablish the upward trend in per capita food production, either the growth of food production must accelerate or that of population must slow. Given the resource constraints described in this chapter—land, water, and energy—it will be difficult to reestablish a 3 percent rate of growth in food production. The hope of reducing hunger thus rests more heavily than ever on population policies and family planning programs.

Consumers everywhere face higher food prices over the long term. This politically sensitive economic indicator perhaps more than any other leads to consumer dissatisfaction and political unrest. Headlines describing food price protests and food riots are becoming commonplace: Witness recent demonstrations in Brazil, the Dominican Republic, Morocco, Poland, and Tunisia.[44] Reductions in food subsidies imposed on deficit-ridden Third World borrowers by the International Monetary Fund as a condition for new loans have led to the coining of a term—IMF riots. Rising demands on the earth's food-producing resources as some 81 million people are added each year are beginning to translate into political unrest and instability.

POPULATION-INDUCED CLIMATE CHANGE

Meteorologists have long recognized that human activity could alter climate in urban communities. It is commonly known, for example, that cities create heat islands, areas where temperatures are consistently higher than in the surrounding countryside. Daily weather forecasts for large cities in the north temperate zone usually differentiate between temperatures in the downtown area and the suburbs—with the former always being higher, sometimes by as much as several degrees Fahrenheit.

Recently another question has emerged: Could changes in land cover, such as deforestation in the Third World, alter climate? The contribution of population growth to deforestation, overgrazing, soil erosion, and desertification in the Third World is highly visible and widely recognized. What is new is the realization that these processes—and, therefore, population growth indirectly—may be driving climate changes in regions as diverse as the semiarid Sudano-Sahelian zone of Africa and the rain forests of the Amazon.

In a sense, the question of whether human activities in the Third World are inducing climate change centers on the stability and resilience of biological systems. Long-standing ecosystems consist of a complex of plant and animal species that interact to their mutual advantage. The principal stabilizing elements are perennial vegetation, a stable water table, adequate underground water and stream flows, and an intact, productive soil profile. These elements permit ecosystems to withstand external buffeting such as short-term climatic fluctuations. A drought, for instance, will visibly alter a semiarid system in the short run, perhaps even leading to a widespread loss of plants and animals, but when it rains the area quickly returns to normal, reestablishing its equilibrium. But a system under exceptional stress may not recover in the expected manner.

These natural climatic fluctuations make it difficult to separate out the possible human effects on climate. A reconstructed climatic history of the Sahel over the last 10,000 years, for example, shows extreme fluctuations, from periods of wetness to dryness. A rather detailed history over just the last few centuries shows that the Sahel periodically experienced severe, prolonged drought. And early in this century, a decade-long drought that was particularly severe during 1911 and 1914 reduced the annual discharge of the Nile by 35 percent and the depth of Lake Chad by about 50 percent; river flows and lake levels fell throughout West Africa.[13]

Meteorologists have traditionally dismissed the notion of large-scale human-induced climate change, arguing that the forces driving global atmospheric circulation would override any local, human-induced alterations. One prominent meteorologist, F. Kenneth Hare of the University of Toronto, points out: "One school of thought—certainly dominant among professionals—says that the high incidence and prolonged duration of recent droughts are simply aspects of a natural fluctuation, due to some deep-seated oscillation of the general circulation of the atmosphere (and maybe the ocean)." Although this is the conventional view, Hare notes that some meteorologists are beginning to wonder whether human activity may now be affecting regional climates.[14]

Previous assessments have often been handicapped by exclusive reliance on conventional meteorological models and tools. But it is now possible to draw on relevant information from several fields, including agriculture, ecology, and hydrology as well as meteorology, and to piece together a plausible hypothesis that population-induced local climate change is indeed under way in Africa, and perhaps in northeastern Brazil and the Amazon Basin as well.

Any assessment of this hypothesis must begin with the understanding that the continents are watered by the oceans and that change induced by population growth must involve interfering with the mechanics of this process. Africa, for example, is watered by moisture-laden air masses from the Indian and Atlantic oceans. The Indian subcontinent receives rain from clouds moving inland from the Indian Ocean and the Bay of Bengal. The Brazilian Amazon derives almost all its water initially from the Atlantic Ocean.

Rainfall normally follows three principal paths: rapid runoff, groundwater recharge, and evaporation. Rapid runoff is water that steadily makes its way back to the ocean via streams and rivers. Aquifers are recharged by water that permeates the soil, percolating below the root zone where it cannot be used by plants. And finally, some rainfall evaporates from soil or from plants, either directly as water intercepted by the plants or indirectly through transpiration.

At a typical site in the central Amazon, such as one that was carefully studied near Manaus, Brazil, roughly one fourth of rainfall evaporates directly and nearly one half reenters the atmosphere in the form of transpiration from plants. Together, direct evaporation and transpiration return three fourths of the rainfall to the atmosphere, leaving one fourth as runoff that makes its way back to the Atlantic. (See Table 1-3.) Such high levels of cloud recharge have led ecologists to refer to tropical rain forests as "rain machines."

When land is deforested, however, this ratio is roughly reversed, with a quarter of the rainfall being returned to the atmosphere and three quarters running off quickly. Rainfall in the region is accordingly reduced, as the atmosphere holds less returned moisture that can become rain later in the cycle. This pattern increases with distance from the coast, for the recharge of rain clouds by evaporation, both direct and indirect, becomes the dominant source of rainfall in the interior. Even in semiarid regions, evaporation supplies much of the moisture in rainfall. A National Academy of Sciences study estimates, for example, that one third to two thirds of all rainfall in the Sahel comes from soil moisture evaporation.[15]

As indicated, water initially enters the Amazon area in moisture-laden air masses from the Atlantic Ocean. As these progress westward, they are continually discharging moisture in the form of rain and being recharged by evaporation and transpiration. On the average, water in the Amazon that does not return to the ocean completes the cycle every 5.5 days. During this process some of the water works its way out of the evaporative cycle as runoff and begins the long trip back to the Atlantic. Moisture left in the air when it reaches the Andes moves southward into central Brazil and the Chaco/Paraguay river regions, where it becomes part of the rainfall cycle in major farming areas.[16]

As the Amazon rain forest is converted to cropland or grassland or is cleared by logging, the share of rainfall that runs off increases. This swells the stream flow while decreasing evaporation and hence the amount of water in the area's hydrological cycle. The net effect is lower average rainfall, particularly in the western reaches. Such changes, particularly those that reduce the amount of water in the Amazon's hydrological regime, would almost certainly reduce the amount that reaches the Paraguayan Chaco and the central Brazilian plateau. In a landmark article in *Science*, Eneas Salati and Peter B. Vose observe that this "might affect climatic patterns and agriculture in south central Brazil."[17] Brazil's efforts to resettle the excess population from its northeast and south and to expand beef production by converting the Amazon rain forest to grassland may indirectly threaten food production in the country's agricultural heartland.[18]

Several attempts have been made to assess the overall effect of deforestation on the Amazon Basin's climate. Perhaps the most comprehensive and authoritative analysis is one by Ann Henderson-Sellers, using a three-dimensional general-circulation computer model created at the Goddard Institute for Space Studies in the United States. Incorporating several variables, this model suggests a gradual decline in average rainfall in the Amazon Basin as deforestation progresses.[19]

The actual reduction of rainfall in the Amazon is not known, but Philip Fearnside, a resident researcher at the Brazil-

Table 1-3. Water Balance in Amazonian Watershed Near Manaus, Brazil

Path of Rainfall	Proportion of Rainfall
	(percent)
Evaporation of rainfall intercepted by vegetation and from forested soil	26
Transpiration from vegetation	48
Total evapotranspiration	74
Stream runoff	26
Total rainfall	100

SOURCE: Eneas Salati and Peter B. Vose, "Amazon Basin: A System in Equilibrium," *Science*, July 13, 1984.

ian Institute for Amazonian Research, reports that in 1979 Manaus went 73 consecutive days without rain. Salati and Vose observe that "if such long dry periods were to become commonplace or extended there would inevitably be a marked change in the natural vegetation." Others have concluded that even a reduction in precipitation of 10-20 percent would alter the Amazon ecosystem. The key question, of course, is at what point these human interventions overcome the traditional stabilizing forces and set in motion changes in vegetation and climate that will lead to a Brazilian Amazon very different from the one we now know.[20]

Changes in land use also affect local rainfall by altering the albedo, the amount of sunlight reflected back into space. The conversion of forests to cropland or grassland and sometimes to desert, for example, increases the albedo. Where this happens, as on the fringes of the Sahara, the affected areas reflect more heat into space. Frequently associated with this is an increase in what meteorologists call subsidence—a large-scale sinking air motion as air descends from higher altitudes to maintain the ground-level heat balances. This high-altitude air is dry and thus reduces rainfall. One consequence of this process, first observed in the mid-seventies, is that once desertification is under way it can become self-reinforcing, gaining momentum over time.[21]

Given these effects of land-use changes on the hydrological cycle and on albedo, it should come as no surprise that deserts are expanding in areas where rapidly growing populations are generating wholesale shifts in land use, such as Africa, northeastern Brazil, northwestern India, and northwestern China. Recently the United Nations Environment Programme undertook a survey to assess desertification in countries in the Sudano-Sahelian region of Africa. (See Table 1-4.) The 14 most populous countries in this group have a combined population of 230 million people, 43 percent of the African total. The survey focused on five manifestations of desertification—sand dune encroachment, the deterioration in rangelands, forest depletion, the deterioration of irrigation systems, and problems in rainfed agriculture.

Not one of the 70 indicators—5 for each of the 14 countries—showed any improvement. According to 13 of the 70 indicators, there was no significant change over the seven years under review. Some 35, or half the total measurements, showed a moderate deterioration. The remaining 21 showed a serious deterioration. The 3 indicators showing the most consistent deterioration were rangelands, forests, and rainfed agriculture. Field observers confirm the survey findings, describing them as somber but realistic.

Perhaps because of the Sahelian drought of the early seventies and the continent-wide drought experienced in Africa in 1983 and 1984, more attention has been focused on changing land-use patterns caused by population pressure and the possible effects on local climate. In addition to the evidence from agriculture and meteorology, and the desertification trends, hydrological data also suggest that Africa is "drying out." In a hydrological analysis measuring changes in river flows, J. Sircoulon observes that "the Senegal, Niger, and Chari rivers, coming from wetter regions to the south . . . have undergone a severe decrease of runoff during the last 15 years. . . . Lake Chad has shown a systematic decrease of level since 1963. At that time the lake's surface covered 23,500 sq. kilometers, and the volume of stored water was 105 billion cubic meters. In 1973, ten years later, the surface had been divided by 3

Table 1-4. Rate of Desertification in the Sudano-Sahelian Region, 1977–84

Country	Sand Dune Encroachment	Deterior-ation in Rangelands	Forest Depletion	Deterior-ation of Irrigation Systems	Rainfed Agricul-ture Problems
Burkina Faso[1]	o	+	+	+	++
Cameroon	o	+	+	o	+
Chad	++	++	+	++	++
Ethiopia	+	++	++	+	+
Guinea	o	o	+	+	++
Kenya	o	++	+	o	+
Mali	+	++	++	+	+
Mauritania	+	++	++	+	+
Niger	+	++	+	++	+
Nigeria	o	+	++	o	+
Senegal	+	++	+	+	++
Somalia	+	+	+	++	+
Sudan	++	+	+	+	o
Uganda	o	++	o	o	+

[1] Formerly Upper Volta.

Key: o = stable, + = some increase, ++ = significant increase

SOURCE: Adapted from Leonard Berry, "Desertification in the Sudano-Sahelian Region 1977–84," *Desertification Control* (Nairobi), May 1984.

and the volume by four. Since this date, the lake has been cut into two parts. The northern part dries up every year, with only a small inflow through the 'Grande Barriere'."[22]

Most meteorologists have been reluctant to attribute significant climate shifts to human changes in land use. Although the evidence that can now be assembled from several fields of study is not yet conclusive, it is rather persuasive. In reflecting on this, Canadian meteorologist Kenneth Hare has concluded in an analysis of desertification in Africa that "we seem to have arrived at a critical moment in the history of mankind's relation to climate. For the first time we may be on the threshold of man-induced climatic change."[23] Knowing what we do about the extent of deforestation over the past generation and about the way the hydrological cycle works, it would be surprising if climate were not changing.

The time may have come for national political leaders and international development agencies to seriously consider the possibility that human population growth may now be driving climate change. More significantly, it is driving that change in directions that will not benefit the people affected. It is reducing rainfall in areas where rain is needed for crop production and livestock grazing. And it is expanding deserts, which in turn is shrinking the land area available for producing food, grazing livestock, and producing firewood. Those responsible for family planning programs will be amazed to learn that their effectiveness—or lack of it—may be altering the climate of their country, perhaps irreversibly.

BREAKING OUT OR BREAKING DOWN

The demographic transition, a conceptual device used by demographers to explain the relationship between population growth and levels of development, has three stages. In the first, which characterizes traditional societies, both birth and death rates are high. Societies have existed under these circumstances for long stretches, for thousands or even hundreds of thousands of years, without any appreciable change in population size. Births and deaths are largely in balance.

In the second portion of the demographic transition, living conditions get better as public health improves, vaccines become available, and food production expands. In this stage births remain high but deaths fall. The result is rapid population growth. A society at this point would typically have a crude birth rate of 45 and a crude death rate of 15, yielding an annual population growth of 3 percent.

The third stage sees living conditions improve further, birth control become widely available and used, and births declining to again roughly offset deaths. A balance between births and deaths in a modern society usually occurs with crude birth and death rates of around 13. The United Kingdom, West Germany, and Hungary are among the dozen or so countries that have completed the demographic transition, reestablishing an equilibrium between births and deaths.

Societies can remain in either the first or the final stage of the demographic transition indefinitely. This is not true, however, of the middle phase. Populations growing at 3 percent per year multiply twentyfold in a century. Many developing countries have been in the middle stage since roughly mid-century. Those now in the fourth decade of 3 percent annual population growth are en route to the twentyfold increase in a century that this arithmetic dictates. Unfortunately, it is difficult to imagine any country, even one that was sparsely populated at mid-century, surviving such an increase with its biological support systems and social institutions intact.

The evidence of recent years suggests that countries stuck in the second stage for more than a few decades experience mounting population pressures, pressures that eventually destroy forests, grasslands, and croplands. As these resources deteriorate, mortality rates begin to rise to reestablish the balance between births and deaths that nature demands. Countries that do not make it to the demographic equilibrium of the third stage will eventually return to the demographic equilibrium of the first. Nature provides no long-term alternative.

The mechanics of this "demographic regression," rooted in the changing balance between population size and basic resources, are becoming clear. For countries that remain in the second stage for an extended period, population growth eventually shrinks the cropland per person. Such areas are also likely to be losing topsoil due to erosion. In these situations, the technological advances in agriculture—plus any increases in fertilizer use that can be afforded—may not be sufficient to maintain per capita food production. The government must either use foreign exchange to import food or obtain food assistance from abroad. Because societies in the middle stage of the demographic transition are largely agrarian, a decline in per capita food production invariably translates into a decline in per capita income.

Many of the countries that have broken out of the second stage of the demographic transition have done so with the aid of cheap energy and relatively favorable population/land ratios. Others are finding it increasingly difficult to reach the point where gains in per capita income and the use of birth control begin to reinforce each other with substantial gains in living standards.

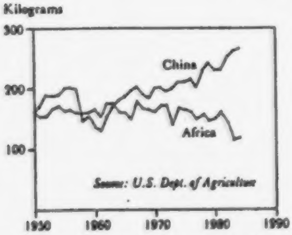


Figure 1-3. Grain Production Per Capita in China and Africa, 1950-84

The prospect of moving from the middle to the final stage of the demographic transition is perhaps best assessed by trends in per capita food production. China and Africa, with populations of just over 1 billion and 551 million respectively, illustrate contrasting prospects. China appears to be breaking out and Africa, having failed to do so, appears to be breaking down. (See Figure 1-3.)

As recently as the early seventies, per capita food production in China was little improved from the mid-fifties, the years immediately preceding the agriculturally disastrous Great Leap Forward. During the past decade, however, per capita food production in China has climbed at an encouraging rate. The rate of population growth has been halved since the early seventies, dropping to just over 1 percent per year. Grain production per capita in the mid-eighties averages over 250 kilograms per year, up by one fourth from the 200 kilograms per year of the early seventies. Even though China has serious environmental problems in agriculture, including soil erosion, and although its cropland base is likely to continue shrinking during the century's closing two decades, there is a good prospect that living standards in the nation will continue to improve through the end of the century.[36]

Africa, in contrast, shows no movement toward the third stage of the demographic transition. And time is running out. Population growth for the continent as a whole is close to 3 percent. The share of the population using birth control is minuscule. Grain production per capita in Africa was quite steady throughout the fifties and sixties, but it turned downward after reaching a postwar high of 180 kilograms per year in 1967. During the mid-eighties, grain production per person is nearly one fifth below the level of the late sixties. As noted in the opening of this chapter, several countries are reporting starvation deaths.[37]

In a recent report, the World Bank expressed concern about rising death rates in several African countries. Bank officials feel that in the absence of a major initiative, a number of countries will experience a disintegration of social institutions and will revert to "bush" economies. The seriousness of this situation led several West European members of the Bank in mid-1984 to call for the establishment of an emergency rescue fund for Africa. Without a sharply expanded effort in both family planning and farming, the prospect is that much of the continent will drop back into the first stage of the demographic transition.[38]

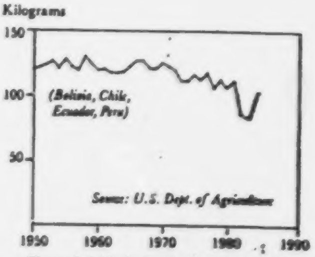
Without a sharply expanded effort in both family planning and farming, much of Africa will drop back into the first stage of the demographic transition.

Other major areas of the world have also remained in the second stage for a dangerously long period. The southernmost Andean countries in Latin America

—Bolivia, Chile, Ecuador, and Peru—have experienced a decline in per capita food production for more than a decade. Indeed, the trend in per capita grain production in these four countries is remarkably similar to that of Africa. (See Figure 1-4.) Grain output kept pace with population growth during the fifties and sixties but then was eventually overwhelmed by the increase in human numbers. As a result, per capita grain production has fallen by roughly one fourth over the past 15 years. The forces leading to a decline in per capita grain production in the South Andes are precisely the same as those in Africa—rapid population growth, widespread soil erosion and desertification, and lack of attention to agricultural development.[39]

If data were available for northeastern Brazil, a region containing some 43 million people, it would undoubtedly show a similar trend and for the same reasons. In addition to high birth rates and widespread soil erosion, this region may be suffering from climate change as well. Another major area of the world at risk is the Indian subcontinent. Population growth ranges from 2.4 percent in India to roughly 3 percent per year in Bangladesh, Nepal, and Pakistan. Under these conditions, grain output per person in the early eighties is little changed from the early fifties.[40]

With a population of 960 million and a growth rate in excess of 2.2 percent per year, the subcontinent has remained in the middle stage of the demographic transition for a dangerously long period of time. Cropland per person is shrinking, soil erosion continues, and population growth remains rapid, making it increasingly difficult for these countries to set in motion the self-reinforcing trends of rising food production per person and falling birth rates.



Source: U.S. Dept. of Agriculture

Figure 1-4. Grain Production Per Capita in South Andean Countries, 1950-84

Under the circumstances now unfolding there is growing uncertainty about how many countries in the middle of the demographic transition will be able to break out. By the end of the century the world may be divided into two groups: countries that have progressed into the final stage and those that have fallen back to the first stage. There are unlikely to be many countries left in the middle. The demographic transition in each nation will have been largely completed or aborted.

A GENERATION OF ONE-CHILD FAMILIES

Earlier chapters outlined why countries with rapid population growth that wait too long before applying the brakes may find themselves in trouble. The first country to recognize this was China. After rejecting for ideological reasons the urging of a vigorous family planning program by some of their own eminent intellectuals in the fifties, the Chinese found by the seventies that they were facing potential demographic disaster.

As mentioned in Chapter 9, during the post-Mao assessment in the late seventies the Chinese undertook several alternative projections of population growth and resource demands. Even assuming that each couple would have just two children, it was clear that the population would continue to grow, because of the youthful age structure, by another 300–400 million people. Recognizing that such an increase in population would further reduce already limited per capita supplies of cropland, fresh water, and energy, the leaders in Beijing saw that it would jeopardize the hard-earned gains of the past generation. Rather than risk a fall in living standards, they decided to launch a one-child family program.

Like China, other Third World countries appear to be waiting too long before tackling their population problems. China is unique in terms of population size, but it shares with every country the relationship between population and local life-support systems. The principal difference between China and other densely populated countries such as Bangladesh, India, Ethiopia, Nigeria, and Mexico may be that the Chinese have had the foresight to make projections of their population and resources and the courage to translate the findings into policy.

A generation of one-child families may be the key to restoring a sustained improvement in living standards.

In one Third World country after another, the pressure on local life-support systems is becoming excessive, as can be seen in their dwindling forests, eroding soils, disappearing farmland, and falling water tables. If other governments take a serious look at future population/resource balances, they may reach the same conclusion the Chinese did. And they may discover that they are forced to choose between a one-child family program and falling living standards or, in some cases, rising death rates. Given the unprecedented numbers of young people who will reach reproductive age within the next two decades, a generation of one-child families may be the key to restoring a sustained improvement in living standards. Success in striving for an average of one child per family will bring problems of its own, including a severe distortion of age-group distribution, but it may be the price many societies will have to pay for neglecting population policy for too long.

No government would launch a one-child family program for fun. Politically it is extraordinarily demanding, particularly in societies with a strong preference for sons, as the Chinese leadership can attest. Yet in some countries, the alternative may be an Ethiopian-type situation, where population growth is being checked by famine. In parts of the Third World where the average couple is now having five children, halting population growth will not be easy. Both ingrained childbearing practices and youthful populations make this a difficult task. The inherent difficulties can be seen in World Bank population projections, which show most of these nations reaching replacement-level fertility of roughly two children per couple around 2035, about a half-century from now. (See Table 10-1.) Once this level is reached, most Third World populations will still double again because of the predominance of young people.

Consider Bangladesh, for example: Though it is much smaller than China, it is one of the most crowded lands on earth. Fertility in Bangladesh is not projected to fall to replacement level until

Table 10-1. Selected Countries That May Have To Adopt a One-Child Family Goal to Avoid a Decline in Living Standards

Country	1982 Population	Assumed Year of Reaching Replacement Fertility	Population Momentum[1]	Projected Population When Stationary State Is Reached
	(million)			(million)
Ethiopia	33	2045	1.9	231
Senegal	6	2040	1.9	36
Bangladesh	93	2035	1.9	454
Nigeria	91	2035	2.0	618
Pakistan	87	2035	1.9	377
Uganda	14	2035	2.0	89
Bolivia	6	2030	1.8	22
Ghana	12	2030	2.0	83
Kenya	18	2030	2.1	153
Tanzania	20	2030	2.0	117
Zaire	31	2030	1.9	172
Zimbabwe	8	2030	2.1	62
Algeria	20	2025	2.9	119
Iran	41	2020	1.9	159
Peru	17	2020	1.9	49
South Africa	30	2020	1.8	123
Syria	10	2020	2.0	42
India	717	2010	1.7	1,707
Mexico	73	2010	1.9	199
Philippines	51	2010	1.8	127

[1] This measures the projected population growth after fertility has fallen to replacement level, due to the large number of young people. (For most Third World countries, this is roughly a doubling.)

SOURCE: World Bank, *World Development Report 1984* (New York: Oxford University Press, 1984).

2035. At that point its population would be so predominantly youthful that growth would continue until eventually there were 454 million Bangladeshis, five times the 1982 population.

Neighboring India has a more successful family planning program and is expected to reach replacement-level fertility by 2010, a quarter-century from now. Yet, like Bangladesh, it would have a rather youthful population that would continue to grow until it came to a halt at 1.7 billion. In effect, India would add the equivalent of China's population to its current numbers. For a country that is now losing some 4.7 billion tons of topsoil from its cropland each year, the prospect of another billion people is distressing, to say the least.[3]

Ethiopia—whose starving people provided the most graphic and continuing reminder in late 1984 of Third World development problems—is not expected to reach replacement-level fertility until 2045. With the momentum inherent in its age structure, the number of Ethiopians is projected to continue expanding until it reaches 231 million, seven times the current population and as many people as now live in the United States. In a country where soils are so eroded that many farmers can no longer feed themselves, this demographic projection appears unrealistic.

Nigeria, the most populous country in Africa, is in a similar situation. If it attains replacement-level fertility in 2035, its youthful population will reach 618 million, more than now live in all of Africa. In some ways Nigeria is much more vulnerable than other Third World countries because its extraordinarily rapid population growth is being supported by imports financed almost entirely by exports of oil, which will be largely depleted by 2000.[4]

Mexico may also have waited too long. Its current population of 73 million is projected to reach 199 million before growth comes to a halt. Water is already critically short, not only in Mexico City but in other parts of central and northern Mexico as well. With a near tripling of Mexicans in prospect, stringent water rationing would seem inevitable. Like Nigeria, Mexico's current population buildup is being supported by oil exports.

These population projections for key Third World countries are the official World Bank projections, but there is an air of unreality about them. Although they are sound in narrow demographic terms, they bear little relation to the deterioration of basic life-support systems and to the resulting hunger and deprivation. The key question facing political leaders in these countries is not whether the projections will materialize, but whether population growth will be checked by vigorous family planning programs or by hunger-induced rises in death rates.

The magnitude of the effort needed to halt world population growth is outlined in a recent study by the Population Institute, which analyzed the costs of providing family planning services in 12 developing countries that contain close to two thirds of the Third World beyond China. (See Table 10-2.) The starting point of the study was the announced population goals of the 12 governments. For Bangladesh, Indonesia, and Thailand, the official goal is to bring fertility down to replacement level by 2000. India hopes to achieve this by 1996. Although other governments have stated their goals differently, the desired reduction in population growth is similar. Egypt, for example, wants to bring its crude birth rate from 37 in 1982 to 20 by the end of the century. Mexico aims for an overall population growth rate of 1 percent in the year 2000, down from 2.3 percent in 1984. For Turkey, the end-of-century goal is three children per couple.

The cost of providing family planning

Table 10-2. Family Planning Costs in Selected Countries, 1985, With Projections to 2000

Country	1985	1990	2000
	(million dollars)		
Bangladesh	56	99	221
Brazil	105	126	179
Egypt	28	39	80
India	313	497	806
Indonesia	141	168	245
Kenya	9	21	48
Mexico	55	81	127
Nigeria	33	68	188
Pakistan	29	68	156
Thailand	42	47	58
Turkey	24	37	75
Zaire	14	30	65
Total	849	1,281	2,248

SOURCE: Population Institute, *Toward Population Stabilization: Findings From Project 1990* (New York: 1984).

services to achieve these goals is substantial. The study notes that the funds would come from four sources—individual couples who pay some or all of the expense of contraceptives they use, private family planning organizations, governments of the countries in question, and the international donor community. The Population Institute calculates that annual expenditures on family planning from all sources would climb from $849 million in 1985 to $2.3 billion in 2000. In these countries couples using family planning services would increase from 64 million in 1980 to 240 million in the year 2000, roughly a quadrupling.

The World Bank estimates that adoption of a "rapid" fertility decline goal (2.4 children per couple in 2000) would require 72 percent of couples to practice contraception and an annual expenditure on family planning of $7.6 billion in 2000. Adoption of such a goal, which would require a 7 percent annual growth in family planning expenditures, would be more than offset by reduced public expenditures in other sectors. Year 2000 savings in education expenditures alone would reach $6 or more per capita in such disparate countries as South Korea and Zimbabwe.[8]

These projected expenditures over the next 15 years are not beyond reach. Yet they cover only the first gap in family planning—the provision of services. For the typical Third World country, bridging the second gap—that between desired family size and the much smaller family required to meet stated national population goals—will mean reducing average family size from today's five children to about two by the year 2000. And this may not be possible without substantial financial incentives or disincentives, such as those now being used in China to encourage one-child families. Wherever desired family size exceeds that which is consistent with the realization of population goals, substantial expenditures or penalties may be required to reconcile the two.

PREPARED STATEMENT SUBMITTED BY PHILANDER P. CLAXTON, JR., PRESIDENT, WORLD POPULATION SOCIETY, AND DR. THOMAS GOLIBER, THE FUTURES GROUP

This Committee has performed an extraordinary service to our country as well as to vast numbers of starving and helpless people in Ethiopia by bringing attention and food to them. It is important to realize, however, that their tragic situation is only for the moment the most visibly critical in Africa. Many neighboring countries are only a short time behind them in moving into the same desperate situation. In others the poorer third or half of the people are already experiencing that degree of starvation euphemistically called malnutrition or undernutrition.

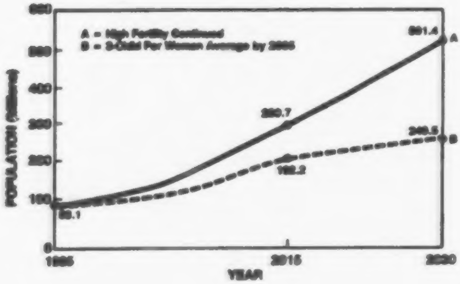
The Agency for International Development Project known as RAPID - an acronym for its full title, "Resources for Awareness of the Impact of Population on Development" deals precisely with the subject concerning this Committee: the effects of too rapid population growth in developing countries on the health and welfare of their peoples and their ability to attain other goals for economic and social progress. RAPID National Analyses which have been made for some 45 countries are designed to show the highest leaders of developing countries the basic demography of their countries and the relations of present and future population growth to food production, family nutrition, health of mothers and children and other vital aspects of their development such as education, jobs, housing, urban growth, export and import trade and balance of payments.

Some of the principal relationships you are investigating in today's hearing can be seen in the RAPID analysis for Nigeria, Africa's most populous country, with some 98,000,000 people.

Future Population Growth - The population of Nigeria is thought to be growing at about 3% per year. If that rate is continued, the population will double in only 23 years. The Total Fertility Rate - the number of children the average woman will have born alive during her lifetime is estimated at 6.3. If that rate should continue for only 30 years, by 2015 the present population would almost treble to about 280,000,000. In 15 more years by 2030 it would be about 500,000,000. However, if by a determined effort, the people of Nigeria could reduce their fertility level to about 3 children per woman by 2005, the population in 2015 would double rather than treble and would be some 90,000,000 less than with high fertility continued. By 2030 it would be about 250,000,000 instead of 500,000,000.

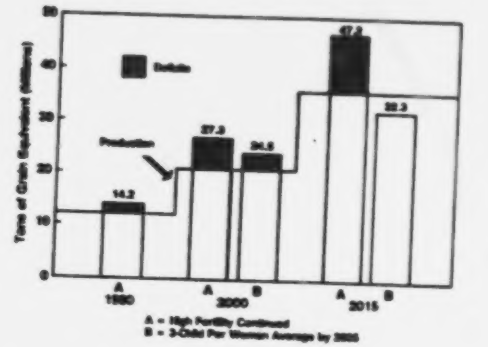
NIGERIA

Population Growth Under Different Fertility Assumptions, 1985-2030



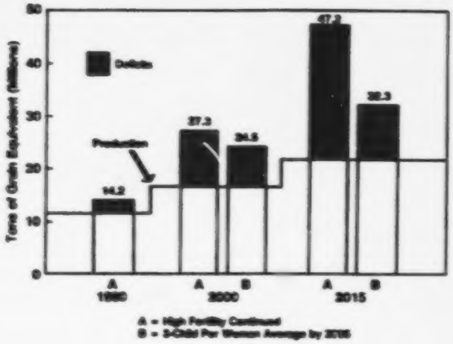
Basic food production and consumption. In the 1960's Nigeria was self-supproting in food and was a leading exporter of cocoa, palm oil and kernels and peanuts. During the 1970's, agricultural production increased an average of less than 1% per year. Production in 1984 was 4% less than in 1980. The requirements for food imports have steadily grown. The Fourth Plan for 1980-1985 projects a future annual increase of basic foods at 3.7% per year. Although this projection is unrealistically high, the excess of food demands over production would continue to grow if high fertility should continue. Increasing hunger would surely result. With a lower fertility rate there would be a small excess of domestic surplus.

Production and Consumption of Basic Foods, 1980-2015
(Assumes Production Increases by 3.7 Percent per Year)

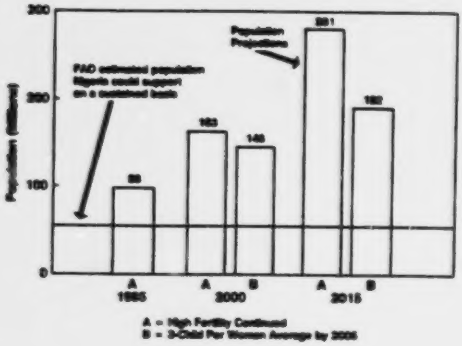


In view of the actual decrease in production of basic foods over recent years, a production increase of 2% per year is more realistic - though still very optimistic. With this substantial rate of increase in production with high fertility continued, the deficit in production would grow enormously - and substantially - even with the lower fertility rate.

Production and Consumption of Basic Foods, 1990-2015
(Assumes Production Increases by 2.0 Percent per Year)

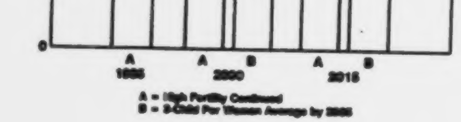


Carrying Capacity - Two levels of technology. The Food and Agriculture Organization in its Land Resources for the Future report indicates that although Nigeria appears to have much unused land, it has already surpassed the potential carrying capacity of the land if percent subsistence level technologies continue. With high fertility continued, the population would enormously exceed the carrying capacity of the land.



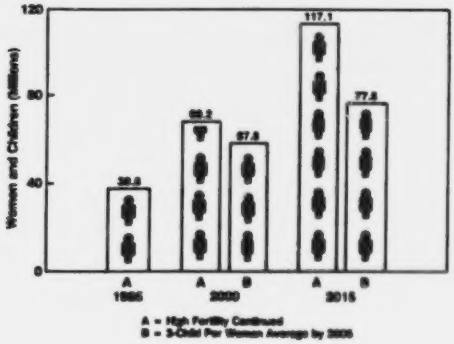
Carrying Capacity
Subsistence Level Farming Technologies

Even if it should be possible for Nigeria to achieve a major transformation in agricultural technology to the intermediate level now experienced in parts of Asia and Latin America, if high fertility should continue, the population would soon again exceed the carrying capacity of the land.



Carrying Capacity
Intermediate Level Farming Technologies

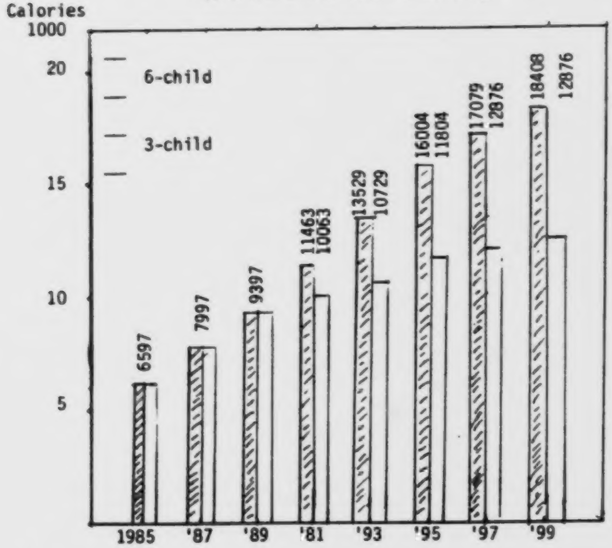
Population at High Health Risk. In any developing country, the population most vulnerable to debilitating and mortal diseases are the women of childbearing age and infants and children under 5. In Nigeria there are now about 40,000,000 in this group out of the population of 98,000,000. With high fertility continued, by 2000 this group would increase to 68,000,000. With a lower fertility rate, it would be 10,000,000 fewer. By 2015 with high fertility it would total 117,000,000 - and with lower fertility would be 40,000,000 fewer. The difference in the burden on the national supplies of nutritious foods and on the preventive and curative health services would be tremendous.



Population at High Health Risk, 1985-2015
(Women in Reproductive Years and Children Under Five)

Family Size and Nutrition The difference high and lower fertility levels will make in the health of the nation is of enormous importance. However, it affects the ordinary family directly in terms of the food it can afford and its requirements for food with many or fewer children. Assume a family with the average six children, born two years apart. Food requirements would increase as shown by the shaded bars. With lower fertility and three children also born two years apart, the food requirements would be as shown by the open bars. We know that in Nigeria 20% of urban families and 40% of rural families do not have incomes sufficient to meet family food requirements. In many cases by the time the fourth child is born the family is consuming all the food it can buy. After that, with other births there simply is not enough nutrition for all.

Nigerian
Calories Requirements
(6-child and 3-child families)



Children A	1	2	3	4	5	6	6	6
Children B	1	2	3					

It should be emphasized that despite the dire situation Nigeria faces in food, nutrition and health, it is better off than many other countries in Africa. The situation in the countries of the Sahel is far more desperate and the need for slowing population growth, along with other changes is even greater.

We do not argue that reducing rapid population growth would be a panacea for Africa's problem of food, nutrition and health. There are other factors that also must be corrected. But we do say that unless there is a great reduction in the fertility rate in most African countries - and quickly - there is little chance that what we now see in Ethiopia will be avoided in many other countries in the very near future.

Prepared Statement of Ambassador Edwin M. Martin, Population Crisis Committee

I believe that this Committee today or at earlier Hearings has received adequate information about the population growth which is taking place at various rates in various countries and its consequences for human well-being now and in the future. Information has also been provided, especially by Mr. Claxton, on the improvements made possible by slower rates of growth, not only with respect to hunger but as to many other important aspects of our lives.

The obvious question left is what are the main obstacles to achieving such a lower rate of growth where it is needed and how best the U.S. can help to overcome them when our help is requested. I shall attempt to describe the obstacles and Senator Taft will outline the ways the U.S. can help.

The principal actors in this drama are the governments and the parents. Each faces certain inherent constraints but each is also subject to external influences. I shall describe the latter first. Before doing so I wish to emphasize that the relative importance of each obstacle I mention in each of the three categories varies from country to country and even within some countries. Generalizations, which are all there is time for today, have to be used with caution.

Perhaps the most talked about "influence" is religion. I feel it is important, but we should not be too frightened by it. First as to the Catholic religion. The position of the Pope and the top Catholic hierarchy is well known. On the other hand the four leading Catholic countries of Europe, Italy, Spain, Portugal and France, all have growth rates of 1% or less, in all abortion is accepted as the inescapable answer in many cases and has been legalized in Italy and France. Polls have made clear the attitude of U.S. Catholics toward birth control. In the other big Catholic area, Latin America, public and private family planning programs are the rule, not the exception, and good progress has been made in most of them.

As to the countries whose religion is primarily Islam, the picture is more uneven though it probably is due more to the position assigned to women than to strictures against family planning, religious leaders often being favorable to it. The governments of the UAR, Pakistan and Bangladesh have all endorsed reduction in their population growth strongly but it is clear that Muslim influences have been important though not unique factors in preventing much progress. The Middle East countries have rarely endorsed family planning and their oil wealth has not, at least as yet, produced a decline in growth rates.

On the other hand a largely Muslim country like Indonesia is carrying out a very sucessful program, as has Tunisia under its modernizing leadership, especially with respect to the role of women.

In a few cases the belief that more is better, especially with respect to military power, disregarding how much it depends today on hardware rather than the number of soldiers still can be a problem. Malaysia seems to be the most prominent current case, recently having cancelled a rather successful family planning program in favor of a population of 70 million in the next century.

There are also cases, particularly in Africa and India, where tribal or ethnic rivalries resist population control programs. This is often serious but the examples are few, Kenya being one of the key ones helping it to be the leader in the growth race with the average woman having 8 children.

In some countries, especially in Latin America, extreme left groups join the conservative religious leaders in opposing family planning, denouncing it as a U.S. effort to weaken the developing world on the one hand and on the other pointing to the Soviet bloc and Cuba as examples of how low growth falls in Communist countries.

I believe none of these obstacles is as important globally as those centered in governments and in parents. As to governments, most developing countries have bureaucracies which are inexperienced, poorly trained, and often corrupt. In so far as they are educated, they tend to be and wish to remain isolated from rural life though 70% or more of the population of most countries are villagers.

To worsen this problem there is a natural tendency to put family planning in the Ministry of Health, naturally the domain of M.D.s. The skills of a fine doctor and a good public administrator have few overlaps. In addition they tend to prefer the challenges of curative care rather than the largely routine ones of contraception and to be reluctant to delegate the latter to the less trained midwife, traditional doctor or paramedic even though most of the latter do live in villages, have the confidence of villagers and are usually women, an important advantage in many cultures.

Governments of most developing countries are also hard-pressed to collect enough taxes to finance all the programs they would like to provide and many others seem to them to produce more visible and immediate returns, really and politically.

At the parent level there are several kinds of problems, most of them with deep cultural and sometimes practical roots. In the absence of social security systems in most developing countries, conventional wisdom is that many children will ensure enough surviving to take care of you in your old age. The pattern of low child mortality and opportunities for a better educated, more healthy child to earn more is a relatively new one, still not usual, especially in Africa.

It is also conventional wisdom in many rural areas that many children are needed to help parents with running the farm. Rural overpopulation, reflected in massive rural-urban migration, is making this an objective but it will take time for this to be accepted widely.

More important than either of them, in my judgment, is the tradition in most, though not all, societies, that the man is the decision-maker for the family. He tends to want children to show his virility and to have his name carried on. In many cases, as revealed by studies of food distribution within households, he is little concerned about his wife's health. He may also fear that protecting her against pregnancy opens the door for her to deceive him. A study done several years ago indicated that one-third of Mexican women employing a good contraceptive thought their husbands didn't know it. For the male to be the leader in such matters is facilitated by the superior education he usually has compared to his wife though this is lessening gradually.

I have the feeling also that one of the various reasons why the many families who live below the poverty line and are hence least able to give their children the education and nutrition and health care necessary for them to fulfill their potential in life nevertheless have the largest families is that their first priority is survival through tomorrow or til harvest at best. Planning for the future of their children and choosing to have the number they can provide with good prospects for their families seldom commands their attention. One must never underestimate the importance of the literal meaning of "family planning."

In closing I wish to emphasize to this Committee, established to deal with the critical world problem of hunger on which I have spent much time in recent years, how central I feel is the poverty factor. Plenty of food is being produced; more will be of little help unless it can cost less, seldom possible. In fact the reverse will often be the case as good land and fresh water is used up to feed 84 million more people each year. In these circumstances there is no escape from the conclusion that a two-child family will eat better today and tomorrow than a six-child one. There will be more resources to go around and less price-elevating demand.

PREPARED STATEMENT OF ROBERT TAFT, JR., FORMER U.S. SENATOR, POPULATION CRISIS COMMITTEE

Congressman Leland, distinguished members of Congress, I am pleased to be invited here to testify before the House Select Committee on Hunger.

I am a member of the board of directors of the Population Crisis Committee. PCC is a private non-profit organization which has, since its establishment in 1965, been a leader among population organizations in efforts to strengthen political and financial support for family planning overseas. Our work involves high-level advocacy at home and abroad to increase government commitment and also selective support of innovative private family planning programs in developing countries. It is perhaps important to state that we receive no U.S. government money for any part of our programs. Thus, while we may express strong opinions about the direction of U.S. population assistance, these comments are not motivated by any financial interest in the program. It is also important to affirm that PCC does not advocate the use of abortion as a method of family planning.

PCC welcomes the opportunity to share with the Select Committee on Hunger our growing concern over the future of U.S. assisted international family planning programs and the potentially devastating impact that a reduced U.S. commitment to efforts to reduce rapid population growth might have on the prospects for long-term development in the Third World, including developments that would face the problems of food production and hunger.

Unless Congress intervenes directly to challenge certain aspects of the Administration's management of U.S. population assistance, the overseas family planning infrastructure which has been painstakingly built over the last two decades will be dismantled. The process is already well underway.

The origins of the current policy crisis date back to the International Conference on Population held last August in Mexico City. In preparation for U.S. participation in the conference, the White House issued a policy statement on U.S. population assistance which was a dramatic reversal of longstanding bipartisan policy on the subject.

The draft White House policy statement made some incredible statements. It argued that population growth "is, of itself, a neutral phenomenon," that in fact "population growth has been an essential element in economic progress." It characterized the efforts of Third World countries to moderate population growth rates as "an overreaction." Arguing that the post-war population boom need not have become a crisis, it blamed the problems associated with current population pressures abroad on mismanagement by Third World countries of their economies, in particular, government control and interference in the form of price fixing and confiscatory taxes. Finally, it argued that economic freedom, leading to economic growth, would in and of itself lead to population stabilization. By proposing free enterprise as the solution both to the problems created by rapid population growth and to population growth itself, the paper implicitly rejected the importance of direct interventions to bring down birthrates through organized family planning services.

In addition to these spurious pronouncements on population growth, the paper set forth specific new restrictions on eligibility for U.S. population assistance, designed to impose the Administration's views about abortion on family planning programs around the world. The paper stated that the United

States "does not consider abortion an acceptable element of family planning programs and will not contribute to those of which it is a part. Nor will it any longer contribute directly or indirectly to family planning programs funded by governments or private organizations that advocate abortion as an instrument of population control."

Over the summer, public reaction to the White House draft poured in from across the country. In June, July and August of 1984 no less than 244 editorials and Op-Ed pieces opposed the Mexico City policy statement. Only 37 supported the proposed policy changes. A Gallup poll showed that fully 71 percent of those who expressed an opinion rejected the new abortion restriction and 90 percent rejected the arguments about population growth and economic development.

In an effort to diffuse a growing public relations fiasco, the Administration moved on July 13 to issue a revised policy paper for the Mexico City Conference, which it characterized as a "compromise." The sections dealing with the relationship between population growth and economic development remained unchanged. The single compromise related to the new abortion restrictions. Governments which include abortion in family planning programs are exempted from the new abortion provisions so long as they maintain segregated accounts for U.S. funds. But multilateral organizations and nongovernmental groups are to be rendered ineligible for further U.S. assistance if they "perform or actively promote abortion," regardless of the source of funding for abortion activities. The way in which these terms are now defined poses a serious threat to continued Agency for International Development (AID) support of those nongovernmental organizations most active in the expansion of family planning services worldwide.

The policy that the United States delegation took to the Mexico City Population Conference was blatantly self-contradictory -- it pledged continued U.S. population assistance, but at the same time rejected the need for it.

AID is now in the process of attempting to implement the new Mexico City population policy, and the agency continues to profess a continued strong commitment to international family planning. But any illusions that the Administration would temper the implementation of its new policy so as to avoid damage to ongoing family planning programs were shattered by the withdrawal of U.S. support to the International Planned Parenthood Federation (IPPF) last December. More recently, AID has withheld $10 million out of the $46 million U.S. contribution to the United Nations Fund for Population Activities (UNFPA), the amount earmarked by Congress last year, because of concerns over UNFPA's assistance to programs in China. Future U.S. contributions to UNFPA now appear increasingly vulnerable to attacks by anti-family planning groups.

Unfortunately, the attack on family planning programs has not stopped with UNFPA and IPPF. Since February, AID officials have taken steps to move against the large U.S. nongovernmental family planning organizations (NGOs) which constitute the remaining major channels of population assistance other than direct support to governments. The potential impact on international family planning programs of a withdrawal of U.S. funds to both IPPF and UNFPA, combined with ineligibility of large numbers of foreign NGOs to receive AID funds through U.S.-based intermediaries, is enormous.

In a large number of countries receiving support through NGOs, abortion is legal for reasons other than a threat to the life of the woman. In 35 countries receiving AID assistance in FY 1984, representing 1.5 billion people or over 70 percent of the population in all countries receiving assistance, the availability of abortion is permitted for non-life-threatening conditions. In some countries, the legal status of abortion is similar to that in the United States. However, the list of 35 countries also includes major Catholic countries like Brazil and Mexico where abortion is partially restricted as well as important pro-Western aid-recipients like Kenya, Morocco and Thailand. Six out of 10 countries on AID's priority list for population assistance fall into this category. Most medical institutions and health providers in these countries -- the backbone of AID-supported family planning programs -- would lose eligibility for support, since under AID's proposed language they are performing or promoting abortion "as a method of family planning." Their loss of eligibility would represent a major longterm setback to ongoing family planning programs.

In terms of the impact on the major channels of population assistance, a planned $17 million grant of cash and commodities to the International Planned Parenthood Federation (IPPF) has already been withdrawn. All technical assistance, training and research programs carried out by U.S. universities are threatened because universities cannot, according to their legal advisors, accept responsibility for policing the Administration's new restrictions. The major U.S.-based NGO intermediaries, have also indicated that they may be unable to reach accommodation with AID on the new contractual language. Out in the field, foreign organizations are indicating that they cannot agree to some or all of the provisions, including organizations with no current involvement in abortion. Some $140 million in current programs may be at stake.

As ineligibility eliminates current NGO intermediaries, AID will be forced to allocate increasing amounts of population funds to generally less effective government programs. Ironically, less effective family planning programs that reach fewer couples will result in unwanted pregnancies which in turn will lead to more maternal deaths in childbirth, infant deaths and an increased number of abortions. Closely-spaced births and frequent childbearing are major contributors to high rates of infant and maternal mortality in the Third World. Large families adversely affect maternal and child nutrition, birth weight and limit immunity against disease. Family planning alone could reduce infant and maternal mortality by half by helping couples space births and avoid high-risk pregnancies. Researchers at Johns Hopkins University estimate that 5.8 million infant and maternal deaths could be prevented annually if ideal child spacing and avoidance of pregnancy by very young and older women were universally achieved. Unfortunately, only one-third of the 500 million couples in developing countries, excluding China, have access to family planning services. By lowering the cost-effectiveness of family planning efforts, the new population policy will reduce access to family planning services and increase the number of couples resorting to abortion.

Besides the disastrous practical impact the implementation of the new policy will have on international family planning programs, serious questions of principle are raised by the Administration's new policy. We believe the committee should recognize several broad concerns shared by many in the international family planning field, including general issues of foreign assistance policy.

First, implementation of the Administration's new policy suggests to people in developing nations that the U.S. government now seeks to manipulate the population policies of their countries by imposing conditions on its assistance to indigenous nongovernmental organizations potentially at odds with law and policy in the aid-recipient country. This represents a precedent-setting break with the longstanding principles of non-interference and voluntarism associated with U.S. population assistance programs. Bedrock principles of U.S. population assistance since the inception of the program 20 years ago have been that population assistance is never to be imposed on disinterested developing country governments, that other forms of development assistance such as PL 480 are not conditioned on acceptance of a particular population policy, and that U.S.-supported programs respect local cultural and religious values. Implementation of the policy attempts to make U.S. private sector institutions and their indigenous subgrantees in developing countries tools of the Administration's anti-abortion campaign. Such misuse of private sector institutions tarnishes the image of all U.S. foreign assistance programs and in particular of population assistance.

Second, in implementing its new policy, the Administration has taken care to protect the constitutional rights of U.S.-based organizations to engage in legal abortion-related activities with funds received from sources other than AID. The decision not to apply the new abortion restrictions to U.S. organizations is obviously based on the Administration's recognition that U.S. courts could be expected to overturn such a policy on both statutory and constitutional grounds. The message of the new policy is that the Administration is prepared to punish the citizens of other countries by denying funds for much needed family planning services because of the availability of a medical procedure which is legal and widely performed in our own country.

While such a clear double standard may be permissible in a strict constitutional sense, it exceeds the statutory provisions of the Foreign Assistance Act and runs directly counter to important principles of current U.S. foreign policy. The U.S. has a longstanding commitment to both the spread of democratic institutions and the respect for national sovereignty. Although the Administration has recognized the inherent national sovereignty of other nations in its decision not to impose the new abortion restrictions on government-to-government programs, it has failed to recognize that national sovereignty extends to foreign nongovernmental organizations which operate under laws and policies of their own countries and which often receive funding for family planning from their own and other donor governments. Our critics around the world are likely to exploit a policy which imposes restrictions on the activities of LDC institutions and citizens which would be unacceptable -- even unconstitutional -- in the U.S.

Third, the new population policy runs directly counter to one of the centerpieces and broad policy themes of the Reagan Administration's agenda -- support for the private sector. The private sector can be an extremely powerful and dynamic force for change in the developing world, and we fully support efforts to expand private sector initiatives in family planning. However, one must question the sincerity of the Administration's promotion of the private sector when the existence and effectiveness of innovative and creative private institutions is threatened for reasons of political expediency.

The organizations threatened are some of the most cost-effective and innovative institutions in the U.S. foreign assistance program. They are also the repository of most of the world's technical expertise on family planning — an essential resource that can not be easily replaced. The organizations play a critical institution-building role, especially important in the developing countries which are plagued by a lack of infrastructure and trained manpower. By virtue of long experience, they pioneer new strategies and invent innovative solutions to problems that are tailored to local conditions.

If the Administration is sincere in its commitment to expand access to voluntary family planning services worldwide, it cannot realistically accomplish that goal without the private sector and multilateral organizations. Currently, AID government-to-government population assistance reaches less than 30 countries. In contrast, NGO programs reach 90 countries, and UNFPA programs reach 120 countries. (See Table 1). There are no bilateral population programs (but large NGO programs) in key countries such as Mexico, Brazil and Nigeria where direct government-to-government support would be politically unacceptable to those countries. The small number of bilateral programs, combined with problems of political sensitivity which would be engendered by direct U.S. population assistance in a number of countries important to U.S. national security, make private, nongovernmental funding channels not just cost-effective, but essential.

The declarations of the International Conference on Population in Mexico City indicate that world leaders have come to recognize the serious consequences of excessive population growth. Many of the leaders of developing

POPULATION ASSISTANCE PROVIDED BY AID BILATERAL PROGRAMS, IPPF, OTHER NGOs & UNFPA BY REGION
(in millions of dollars)

	Bilateral (proposed FY 1986)	IPPF (actual FY 1984)	Other Centrally Funded NGOs*	UNFPA
Africa				
Total Number of Countries	8	28	26	42
Total Funding Levels	$23.9	$10.2	$6.9	$33.7
Latin America and the Caribbean				
Total Number of Countries	11	34	21	32
Total Funding Levels	$25.5	$13.9	$12.7	$17.5
Asia and the Pacific				
Total Number of Countries	4	19	12	31
Total Funding Levels	$43.3	$11.7	$5.9	$57.2
Near East				
Total Number of Countries	2	13	6	10
Total Funding Levels	$6.0	$2.7	$5.2	$12.3

* Includes only field expenditures associated with the programs of nongovernmental organizations centrally-funded by AID's Office of Population in FY 1984. An estimated $20 million in additional NGO programs are included under the bilateral programs. These would also be affected by the new policy. Total allocations to NGOs in FY 1984 represented 48 perent of the AID population budget.

nations now understand fully the intensity of the problem and the urgency of immediate action to confront it.

In the long run, sustained fertility declines depend on indirect development measures such as raising the status of women, improving child survival and increasing economic opportunities for the poor majority. These efforts increase the impact of direct interventions to lower birthrates through family planning and are desirable on their own merits. Although socioeconomic development does not affect fertility directly or immediately, it can have an enormous impact on levels of contraceptive prevalence, acceptance of small family ideals, and women's perception of alternative roles to childbearing. Without these changes, it will be extremely difficult for most countries to attain population stabilization even if family planning efforts are greatly expanded.

But it should be noted that the bulk of U.S. development assistance is devoted to these types of social and economic programs, in particular to programs which have the effect of further reducing death rates. Only a small proportion is committed to population and family planning measures designed to affect birthrates. In FY 1984 and FY 1985, AID spent over seven times the amount expended for population assistance on efforts to improve health and nutrition through bilateral and multilateral assistance and PL-480 title II. During the period FY 1962 to FY 1984 AID expended $2.4 billion on international family planning and $30.4 billion, or roughly 12 times the amount, on PL-480 assistance. These figures include the U.S. contributions to the UNFPA — the only multilateral agency with any major focus on population programs. The figures do not include our contributions to the multilateral development banks and other agencies which are heavily involved in agricultural development, health and nutrition, but for the most part support few if any family planning programs. (See Table 2). Commendable efforts to improve health and nutrition and accompanying reduction in mortality rates and increased life expectancy must be balanced with increased efforts to reduce fertility rates. Otherwise, our well-meaning assistance will simply complicate the long-range problems in developing countries.

PCC applauds the efforts of the Select Committee on Hunger to discover the best strategies for alleviating hunger through long-term development. Such an endeavor is especially important in the wake of the recent food crisis in Africa. Realistically, the food crisis will not be resolved without resolution of the population crisis. Unfortunately, most African governments were reluctant until recently to establish and maintain effective family planning programs. But foreign aid donors might have prevented some of the tragedy in Africa. Too little of their investment in Africa has gone for family planning. The 400 million Africans living in sub-Saharan countries require $600 million to $800 million per year to ensure access to good voluntary family planning services. The donor community has been providing only about 10% of the needed amount.

Donors provided about $1 billion worth of food aid for Africa in 1984, and at least $500 million more is needed for the present emergency. It is likely that a decade of adequate investment in family planning would have been much more cost-effective and would have gone a long way toward alleviation of the human misery now occurring.

RELATIVE PRIORITIES IN U.S. FOREIGN ASSISTANCE
(millions of dollars)

	FY 1984 actual	FY 1985 estimate	FY 1986 proposed
EFFORTS TO IMPROVE HEALTH & NUTRITION	1695.9	2184.5	1620.8
Bilateral Assistance	851.4	1038.0	943.8
Agriculture, Rural Development & Nutrition	723.2	769.7	797.4
Health	128.2	243.3	146.4
Child Survival Fund	-	25.0	-
P.L.-480 - Title II	740.0	1001.0	650.0
Multilateral Assistance*	104.5	145.5	27.0
EFFORTS TO LOWER BIRTHRATES	242.4	287.1	250.0
Bilateral & Multilateral Assistance			
Population Planning	242.4	287.1	250.0

*Multilateral assistance includes only U.S. voluntary contributions to the following organizations: United Nations Children's Fund (UNICEF), Food & Agriculture Organization/World Food Programme (FAO/WFP), and International Fund for Agricultural Development (IFAD). Total multilateral funding levels do not include U.S. voluntary contributions to the international financial institutions (IFIs), such as the World Bank, the International Development Association (IDA), and the regional multilateral development banks (MDBs). The IFIs devote an extremely small percentage of their total expenditures on population assistance and spend in excess of one quarter of their budgets on agriculture and rural development activities.

Every year donor nations provide developing countries with foreign aid totaling about $11 a person. Of that amount only 14 cents goes for population planning and programs. Without substantial increases in funds for family planning programs the developing world is doomed to repeat, perhaps several times, the tragedy in Africa.

Studies show that most couples in the developing world wish to plan when to have children and how many to have. World Fertility Survey data from 29 developing countries in Asia and Latin America indicated that almost half of married women of reproductive age (15-49) want no more children, and one-third did not want or plan their last pregnancy. The approximately 40 million pregnancies terminated worldwide by abortion each year, the majority illegal, indicate unmet demand for effective family planning services. Family planning programs can substantially reduce reliance on abortion to regulate fertility. Family planning programs can help in acceptance of such plans, especially where the problem is most severe.

However, current world efforts are inadequate. Family planning information and services are not readily available to roughly two-thirds of Third World couples (outside of China). As a result, contraception is used by an average of only 21 percent of couples in these countries. Third World access to and use of contraception must increase three to four-fold to reach all couples who need family planning services. This will require annual worldwide expenditures of $4 billion to $8 billion, or between $10 and $20 per couple of reproductive age living in developing countries.

Economic conditions in the less-developed countries make the initiation of new family planning programs difficult. Decreased foreign exchange earnings and increased costs for imports and debt service have left many countries in serious economic straits. Even so, many have substantially increased spending on population programs. Countries like India and Indonesia now cover most of the cost of their own programs. Nevertheless, requests from developing nations for population assistance substantially exceed funds available from AID, UNFPA and IPPF. Approved but not funded UNFPA programs total at least $250 million this year. AID and IPPF together need an additional $120 million per year to meet current backlogs.

A minimal budget to serve 400 million couples with basic services would require an increase of aid from the U.S. and other donors from $450 million to at least $2 billion, with developing nations (excluding China) themselves increasing their budgetary allocations to family planning from $650 million to at least $4 billion. Even these figures do not take into account the fact that the number of reproductive age couples will continue to expand (by 40% by the end of the century). Most of these future parents are already born. To meet the U.S. share of these requirements and help initiate new programs, an increase in the AID budget for population assistance from $290 million to $450 million is needed immediately.

The increased awareness and receptivity to family planning programs worldwide are largely the result of U.S. leadership over the past 20 years. We are still the most important technical and financial resource around the globe, and this kind of leadership remains clearly in the national interest. The new Mexico City population policy calls into question the leadership role the U.S. has played in expanding the availability of voluntary family planning services worldwide over the last two decades. It is overwhelmingly clear that the U.S. must continue its leadership role not only in financial aid, but in urging developing world governments to give higher priority to family planning.

Congress must directly challenge the implementation of the Administration's new Mexico City population policy by addressing the issue this year. Failure to do so may result in a dismantling of the vast network of multilateral and nongovernmental organizations, both at home and abroad, that have paved the way for government acceptance of the necessity of family planning services around the world.